

**MINUTES FOR MEETING  
CAMP STANLEY STORAGE ACTIVITY  
CONTRACT NO. W912G-07-D-0028, DO11  
Parsons Project Nos. 746545 (FFP) and 746546 (T&M)**

Date: November 25, 2008  
Time: 9:00 A.M. – 3:00 P.M.  
Place: Parsons - Austin, Texas  
Subject: Environmental Project Status Meeting  
Attendees:

<b>Attendee</b>	<b>Organization</b>	<b>Phone</b>
Wayne Elliott	U.S. Army Corps of Engineers, Fort Worth District	871-886-1666
Glare Sanchez	Camp Stanley	321-662-3718
Chris Beal	Portage	210-336-1171
Julie Burdey	Parsons	512-719-6062
Ken Rice	Parsons	512-719-6050
Samantha Elliott	Parsons	210-347-6012
Kathleen Bradley	Noblis	210-408-5444
Bob Edwards	Noblis	210-408-5552

*\*Minutes prepared by Kimberly Vaughn, Parsons.*

The presentations given at the meeting are presented in Attachment \_.

**GENERAL DISCUSSION**

Julie Burdey opened the meeting and reviewed the agenda. The December 11<sup>th</sup> meeting with TCEQ and EPA will proceed. Most responses were positive that the date is clear. Ms. Burdey will confirm the date and location (Austin office) for the meeting by email today. Glare would like additional time on the agenda for Weston to summarize their current investigations. There was a discussion of whether soil generated by Weston can be used on the range berm.

**Action Item:**

**GROUNDWATER PLANNING MEETING**

Samantha Elliott began the planning discussion for the December groundwater event. There will be based wide water levels collected and all four westbays will be profiled. The sampling is scheduled for the second week in December. The nine on-post wells scheduled for sampling were covered. The six monitoring wells will be sampled for metals and volatile organic compound (VOC). The three drinking water wells will be sampled for eight metals. Nickel has been dropped for the analysis based on the previous discussions.

Chris Beal asked if CS-9 will be purged before sampling. Glare Sanchez indicated she would like to keep sampling methods consistent over the events. There was a discussion of doing a pump test and sampling for metals at CS-9. After discussion of the CS-9 results, it was

decided to remove CS-9 from the sampling until water levels stabilize from non-drought levels. It was decided to use the Hankins & Anderson project for some planning of a pump test study at CS-9. The well will be sampled from now on as if it were a monitoring well. Mr. Beal noted that wells CS-9 and CS-11 would be good supply wells for industrial water usage.

**Action Item: Parsons will research any conditions on using water from CS-9 or CS-11 for road work or dust suppression.**

**Parsons should prepare estimate for a pump test study at CS-9.**

There was a discussion of any observable trends in the historical analytical results. Ms. Elliott discussed at there are different monitoring wells that show different trends depending on the location on CSSA and the rain amounts. At CS-16 the concentrations are increasing and it is surmised its related to the bioreactor. Ms. Sanchez asked specifically about concentrations at the six new monitoring wells. Ms. Elliott noted that the metals concentrations have been decreasing but that there also has been no rain. The September data shows only “F” flagged metals results in the six new monitoring wells. The groundwater conditions summary slides were discussed, Ms. Elliott will prepare those for the December 11<sup>th</sup> meeting.

**Action Item: Add agenda item to December 11<sup>th</sup> meeting to cover groundwater monitoring update.**

The off-post wells were discussed. There are 27 wells to be sampled. Ms. Elliott explained the access agreements that are pending. The wells at LS-5/LS-6 (the church) need a new access agreement, but no one lives at the location. The well is sampled because of the granular activated carbon (GAC) filtration system. Ms. Elliott has an address for the current owner and has tried to send an access agreement there. The most southeastern well, DOM-2, also needs a new access agreement. There has been no response to the mailed access agreements. Ms. Sanchez asked whether TCEQ can assist in getting access agreements. Ms. Elliott stated that the owner at I10-7, the Bagheri Brothers, stated he has mailed the access agreement in. CSSA has not received it yet. Additionally at I10-5, the business park with a gas station, Ms. Elliott has delivered an access agreement to the tenants but has not received a signed one. Ms. Sanchez asked about the status of well I10-4. She would like it verified whether it has been properly plugged and abandoned. Mr. Beal and Ms. Elliott will visit the site and try to verify if the well is plugged.

**Action Item: Include in the slide presentation for Dec. 11<sup>th</sup> a request for TCEQ assistance to obtain groundwater sampling access agreements.**

**Verify whether well I10-4 is plugged and abandoned.**

The Bexar Met wells (LS-1 and LS-4) are currently offline, but have been sampled. Ms. Elliott wonders if that information is still helpful. Ms. Sanchez is curious whether wells LS-2 and LS-3 would still have detections, since the neighborhood is on SAWS water now. Ms. Elliott will contact Bexar Met for access. Ms. Burdey mentioned attempting to get long term monitoring optimization in place for off-post wells would reduce sampling. Ms. Sanchez would like the graphs of trends over time and precipitation data

**Action Item: Include as handouts for meeting the historical results of monitoring over time, graphs of trend concentrations and precipitation, etc., to focus on the abundance of historical data available and support implementation of LTMO.**

Ms. Elliott reported that the carbon canister change out was completed in November. The off post results letters for September are ready to be mailed. Ms. Sanchez would like the well owner letter to be changed to say the GAC change out has been done. Ms. Elliott noted that with the next carbon change out the new shacks will be installed. For Mr. Brown's location there are repairs to the shed needed.

**Action Item:** Investigate repairs to the well shed at the Brown GAC system. Confirm number of GAC shacks to be replaced. *Note: the current contract includes Carbonair replacing five sheds (four are 4' x 4' and one is 6' x 8').*

## **NORTH PASTURE SITES**

Kimberly Vaughn began a review of the current planned approach of the four North Pasture sites solid waste management units (SWMU) B-2, B-8, B-20 and B-24. At today's meeting we can agree on an approach to propose to TCEQ and EPA in the meeting December 11<sup>th</sup>. Ms. Sanchez suggested that all sites with activity be reviewed for the regulators in the next meeting.

**Action Item:** Agenda item for regulatory meeting should include updates on AOC 68/69, B-8 soil removals, north pasture sites and Weston sites. Also, include in presentation a request to TCEQ for the status of the reviews of I-1 and AOC 73 submittals.

Ms. Vaughn explained the current plan for the grouped North Pasture sites. As presented in the ecological risk assessment work plan, after additional soil sampling a combined Affected Property Assessment Report (APAR) for the four sites would be submitted. Based on soil sampling results from 2008, three of the sites still have soils impacted with metals. As currently funded, the APAR submittal now would recommend additional cleanup activities. The revised recommendation to obtain closures for the north pasture sites includes submitting a release investigation report for B-2 and performing additional remediation at the other three north pasture sites. After additional remediation at B-8, B-20 and B-24, either a Release Investigation Report (RIR) or an APAR could be submitted. Mr. Edwards asked whether the ecological risk takes lead speciation into account. Mr. Rice explained that the TCEQ requirements for the ecological risk assessment are very specific and that most of the lead at CSSA is lead carbonate. Ms. Sanchez wants to present this option to regulators for their feedback and concurrence.

A summary of the B-2 site was discussed. The slide will be corrected to remove mention of the 2005 RFI Closure Report. This report was not submitted. The compounds of concern (COC) at SWMU B-2 are lead and 2,4-dinitrotoluene (2,4-DNT). Following the 2008 sampling conducted, no COCs remain that are above Tier 1 PCLs, background metals, or ecological benchmarks. An RIR can be prepared for the site to request closure.

The B-8 site history was discussed next. This site started as a small site identified in the 1993 Environmental Assessment that then grew larger. The 1995 geophysical survey identified two anomalies and one anomaly was excavated. One anomaly was not related to waste activities but was an old water pipeline that was removed. Additional geophysical surveys were done in 2003. In 2008 additional soils were excavated to a depth of 2' below ground surface. Some additional work is currently being performed and includes removal of approximately 1,000 cubic yards of soil. If this soil is determined to be hazardous, phosphate-induced metals stabilization

(PIMS) treatment may be necessary. Removal actions will remove lead, barium and copper impacted soils. Approximately 600 CY will be PIMS stabilized and placed at the East Pasture range berm. The COCs at SWMU B-8 are lead, barium, copper and zinc.

Without additional confirmation sampling, we cannot specifically state what remains to be done for B-8 cleanup. Ms. Sanchez questioned Wayne Elliott on plans for future funding to remove metals impacted soils. Mr. Elliott can submit the cost and rate structure on how the current sites are handled.

**Action Item: For future funding, prepare conservative estimates for the three north pasture sites needing removal of metals impacted soils. Establish a price per cubic yard and prepare a draft scope of work. Allow for PIMS treatment and no PIMS treatment.**

B-20 started with soil samples where UXO technicians accompanied the soil samplers and UXO was identified. Previous remedial investigations were performed and soil sifting operations were performed on the northern portion. The COCs at B-20 are lead and copper. Some creek bed samples were collected in approximately 1997. The most prevalent munition found on-site is the 20mm and the remaining UXO requires investigation and clearance. Ms. Sanchez would like to go ahead and sample the pond sediment near B-20, this is an ongoing concern of the EPA. More sampling for confirmation will be needed at the eastern boundary. The entire site needs geophysical survey and UXO clearance. In advance of the geophysical surveys, a controlled burn should be conducted to remove vegetation. Ms. Sanchez would like to coordinate with the Fish and Wildlife Service for the controlled burn. Additionally, 48 hours notice would be required to Mr. Shirley's office. Ms. Sanchez would like the controlled burn to be conducted under the natural resources plan. There is a 3000 CY flat pile of PIMS treated soils that could be used on the firing range berm. Smaller piles (largest is 50 CY) remain in the northwest area that are left over from the PIMS treatment. They were previously authorized to be removed to the east pasture.

**Action Item: Future planning can include a controlled burn and pond sediment sampling. It is possible that Weston is already funded to remove lead (non-hazardous) soil to the range berm.**

The history of SWMU B-24 was discussed. Various investigations up to the most recent vegetation clearance and test trenching to the east were discussed. Based on the current conditions, this site is actually closer to being able to be submitted with an RIR than an APAR. The COCs are SWMU B-24 are barium, copper, lead, and zinc. Soil piles remaining onsite to the north include small PIMS related stockpiles and one pile of rock, munitions debris and some UXO. The two sifted soil piles can be relocated to the east pasture berm. After the 2008 soil sampling results it appears that additional soil removal and UXO clearance are necessary. The geophysical survey should be done initially and vegetation clearance by a controlled burn should be done before the geophysical survey.

**Action Item: Develop cost estimate for disposal of rock and munitions debris pile.**

The list of priorities for future work at the four north pasture sites was developed for use at the December 11<sup>th</sup> regulatory meeting.

## **LUNCH BREAK**

### **SWMU B-3 FUTURE PLANNING**

Mr. Rice began the discussion of the SWMU B-3 treatability study planning. Mr. Rice indicated that based on the discussions during the meeting in October and a specific SWMU B-3 bioreactor planning meeting held November 7, 2008, these are the recommendations developed for moving forward. Mr. Rice discussed additional needed groundwater monitoring data and the recommendation to install piezometers/shallow monitoring wells. Ms. Sanchez asked how many monitoring wells are to be added? Mr. Rice explained that six or eight wells will be added. The vinyl chloride and manganese detections that have occurred in wells WB-06 and WB05 are indications that the additional monitoring wells are needed. Mr. Edwards explained the eventual goal to expand the pilot study to full scale treatment. The goal of the additional monitoring wells is to define the extent of the vinyl chloride and define the extent of the bioreactor's influence on the aquifer.

**(I have a note here that says use graph from last time)**

Ms. Sanchez noted that each bullet recommendation needs to be consolidated into a requirement/recommendation that clearly sets out what is being recommended for each current status item. Mr. Rice and Ms. Sanchez discussed the additional injection water well that is needed. Two wells are recommended, currently one is funded and one is not.

Ms. Sanchez asked about the shallow monitoring wells and the locations in a circle around the bioreactor. Mr. Rice noted that to be sure about the influence of the B-3 bioreactor, wells will encircle the bioreactor. O-1 was discussed as the location of a second source well for injection water. The first source well will be within B-3. The locations are shown in the presentation.

Mr. Edwards discussed the various flow regimes that are occurring (bioreactor leakage, local flow, and regional flow). The relationship between the Lower Glen Rose and the Cow Creek were also discussed. Ms. Sanchez asked whether the tracer study can help answer these questions. Mr. Edwards and Mr. Rice explained that a very good picture of flow zones can be obtained from a tracer study including identification of potential pathways from the B-3 trenches outward. The team discussed whether the shallow monitoring wells should be installed ahead of the water tracer study. The water tracer study could be conducted by using CS-12 water as a supply piped to the B-3 bioreactor for addition into the trench system. The team discussed rental and using the Westbay Mosdax equipment setup for the tracer study. A discussion of the conceptual measures study (CMS) being removed from the budget in order to fund the treatability studies was held.

**Action Item: Develop a scope of work for the water tracer study to submit.**

### **AOC 65 VAPOR STUDY NEAR SVE SYSTEM**

Mr. Rice and Mr. Edwards described their analysis of previous data gathered for AOC 65. Based on review of the available data, they currently do not recommend a tracer study (as related to indoor inhalation) due to their being no exposure potential.

Ms. Sanchez was concerned that the EPA was curious about a tracer study near AOC 65 for the groundwater issues. Mr. Edwards believes that at the previous meeting that the concerns were about vapor intrusion. Mr. Edwards believes that the many CSSA vapor monitoring points

that have data collected previously indicate there is no reason for concern. Mr. Rice and Mr. Edwards also determined that if a vapor intrusion problem were suspected, against the evidence to the contrary, that the money to fund a vapor survey would be better spent to cleanup the source.

One note for the 2001/2002 vapor survey that was performed is that conditions were dry at that time. There is no vapor survey data when conditions in the aquifer are saturated. Mr. Edwards questioned CSSA's plans to remove sources under Building 90. Mr. Edwards proposes the installation of a bioreactor at AOC 65. Mr. Burdey and Ms. Sanchez noted that it is probably too early. The B-3 evaluation is not complete and the results are necessary from a site in the center of CSSA prior to implementation of a treatment method at the site boundary.

**Action Item: Present recommendations of prior vapor data to the regulators at the December 11<sup>th</sup> meeting. Submit that the funding be used to continue SVE monitoring rather than a vapor survey.**

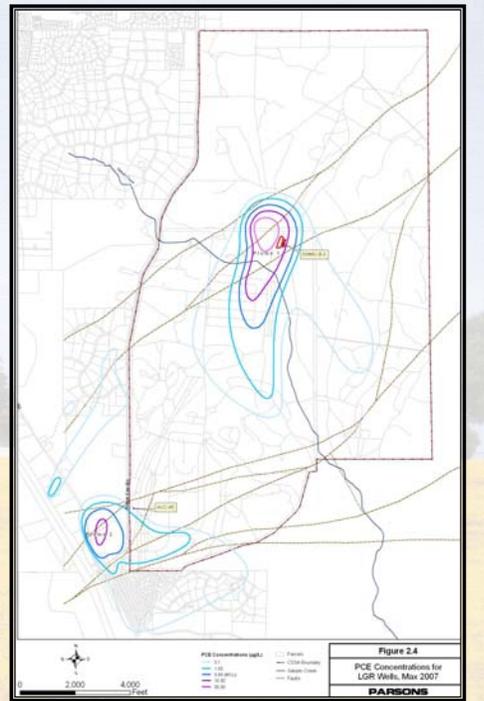
Mr. Rice and Ms. Burdey noted that we could also volunteer to perform a vapor survey during saturated aquifer conditions rather than another vapor survey during drought conditions. Ms. Sanchez discussed this option but would not like to offer this survey during the December 11<sup>th</sup> meeting. Mr. Edwards asked whether there was a vapor survey data point across Ralph Fair Road? No, there are not. The emphasis for the December 11<sup>th</sup> meeting is that there are no issues for the newly constructed Centex homes. No homes are immediately west of Building 90 across Ralph Fair Road.

Ms. Burdey noted the items that should be included on the agenda for the December 11 regulatory meeting. The meeting was adjourned.

Attachment 1,  
Slide Presentations

## CSSA Pilot Studies Description

1. **SWMU B-3 Bioreactor Pilot Study** - designed for an enhanced anaerobic bioremediation of chlorinated hydrocarbons within the underlying fracture limestone in the area of Plume 1.
2. **AOC-65 Soil Vapor Extraction Pilot Study** - designed for removal of chlorinated hydrocarbons within the underlying fracture limestone in the area of Plume 2.



## Bioreactor Pilot Study Objective

### Review

- Determine if the bioreactor is an effective approach for treatment of groundwater at SWMU B-3 (Plume 1).
- Evaluate the extent of bioreactor influence on the effectiveness of treatment in the surrounding fractured media.
- Evaluate the migration of contaminants through the underlying formations and into the underlying aquifer.

## Bioreactor Pilot Study Observations Review

- The Bioreactor is an effective method for treatment of injected contaminated groundwater.
- Continued increase in molar mass of CVOCs in underlying multipoint monitoring well intervals provides strong evidence that significant contaminant concentrations remain in the fractured bedrock formation.
- Data through 16 months of operation shows probable flushing of CVOCs within unsaturated fractured media underlying the bioreactor.
- Additional data is required to determine the effectiveness of the bioreactor on continued treatment of contamination in the underlying fractured bedrock.

## Bioreactor Pilot Study Data Requirements Status

- Determine if the bioreactor is an effective approach for treatment of groundwater at SWMU B-3 (Plume 1).
  - Need additional monitoring data to determine if Plume 1 is reducing in toxicity, mobility and volume. Currently extents of migrating intermediate contaminants such as vinyl chloride and manganese from bioreactor are unknown.
- Evaluate the extent of bioreactor influence on the effectiveness of treatment in the vadose intervals
  - Need additional injection water to allow a greater bioreactor influence on vadose zone intervals.
  - Currently have three monitoring zones within the UGR zone around the bioreactor (WB06 through WB08). Need additional data in the upper formations underlying the bioreactor to determine extent of bioreactor influence.
- Evaluate the migration of contaminants through the underlying formations and into the underlying aquifer.
  - Need additional monitoring data for determining migration of contaminants through the bioreactor's underlying formation and aquifer.
  - Need tracer study to determine the potential migration pathways of contaminants from bioreactor.

## SWMU B-3 Bioreactor Monitoring Recommendations

Add six or eight additional shallow piezometers (~50 ft bgs) near former SWMU B-3 to monitor possible contaminants emanating from the bioreactor.

Perform water tracer study within bioreactor trench 6.

Add additional monitoring/extraction well within former SWMU O-1.

**Right:** Aerial photograph showing the approximate locations of proposed piezometers and monitoring/extraction wells.



## AOC-65 SVE Pilot Study Objective

- Determine if SVE is an effective approach for removal of CVOC from the underlying limestone formation.
- Determine the effectiveness of SVE removal on groundwater concentrations within AOC-65 monitoring well network.
- Determine whether an indoor inhalation exposure potential exists.

## SVE Pilot Study Observations Review

- SVE appears to be removing significant amounts of CVOCs from the underlying limestone formation. The estimated removal rate of PCE (based on analytical data from average of sampling events) for the SVE system is:
  - AOC-65 SVE system = 5 to 700 lb/yr<sup>1</sup>
- Emissions continue to be within permit by rule (PBR) allowable emission limitations.
  - AOC-65 SVE permitted PCE emission allowance = 0.268 lb/hr
  - Actual AOC-65 SVE PCE emission rate = 0.075 lb/hr<sup>1</sup>

Note 1 – Estimated removal rate from initial sampling of newly installed SVE extraction wells.

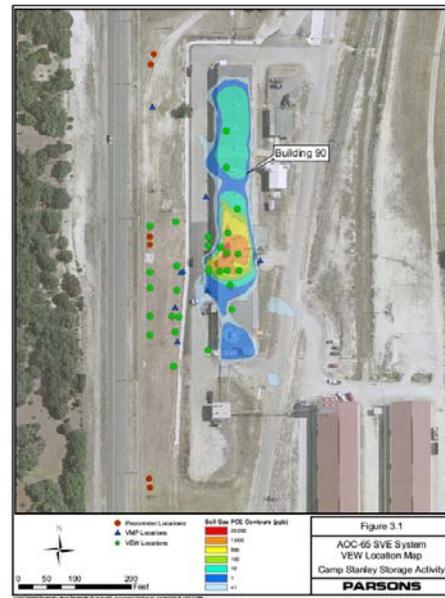
## AOC-65 SVE Pilot Study Concerns

- Is SVE an effective approach for removal of CVOC from the underlying limestone formation.
  - Contaminant extraction rates may be reduced during long operations of SVE.
- Determine the effectiveness of SVE removal on groundwater concentrations within AOC-65 monitoring well network.
  - Concerns regarding contaminant vapors and potential exposure pathways for human health in indoor air quality.

## AOC-65 Soil Vapor Monitoring Results

Soil gas studies in 2002 show extent of PCE soil gas is mostly contained within the building 90 footprint. Indoor air studies from 2002 show no contaminants within building 90 breathing zone air.

**Right:** Aerial photograph showing the location of VEWs, VMPs, piezometers and monitoring wells.



## AOC-65 SVE Pilot Study Recommendations

- Determine if SVE is an effective approach for removal of CVOC from the underlying limestone formation.
  - Continue monitoring to determine long term effectiveness of SVE
- Determine the effectiveness of SVE removal on groundwater concentrations within AOC-65 monitoring well network.
  - Conduct soil gas survey during vadose zone saturated conditions to determine potential extent of contaminated soil gas.

# Camp Stanley Storage Activity SWMU B-3 Planning Meeting

November 25, 2008

Noblis

## SWMU B3 - $\delta^{18}\text{O}$ & $\delta^2\text{H}$ – October 2008

Legend  
 $\delta^{18}\text{O}$ /  
 $\delta^2\text{H}$   
 ‰

MW9-CC  
 -2.788/  
 -11.855

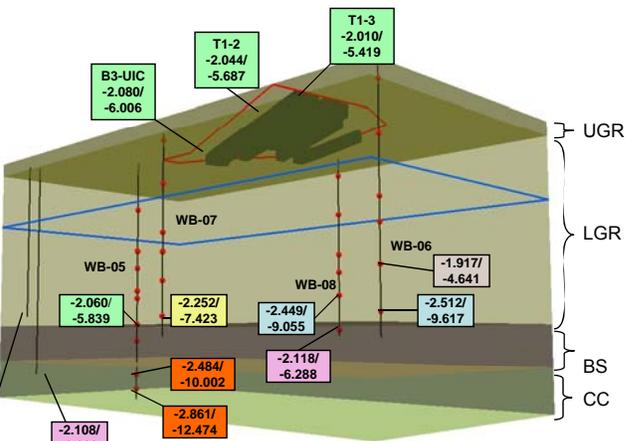
MW9-LGR  
 -2.229/  
 -7.066

CS-D  
 -2.010/  
 -5.611

MW-25  
 -2.069/  
 -5.902

CS-16 LGR  
 -1.893/  
 -4.449

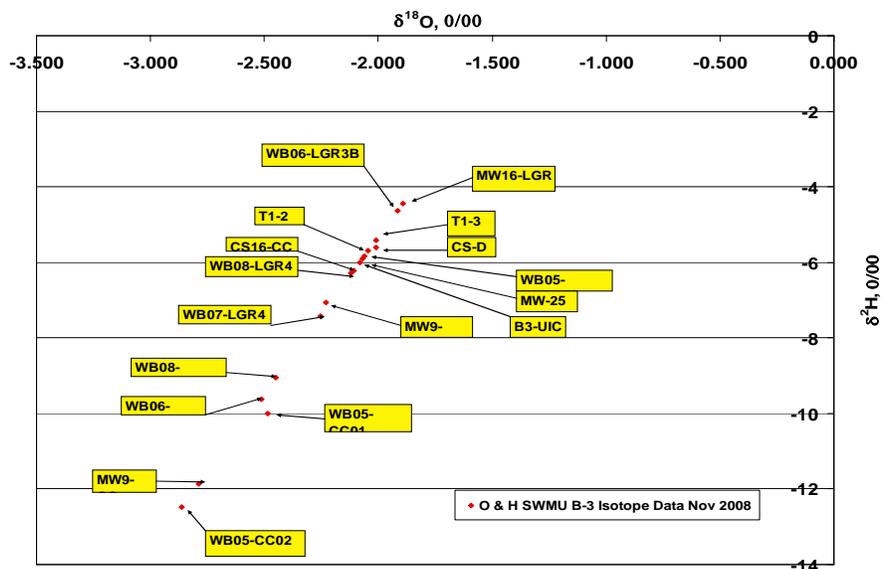
CS-16 CC  
 -2.108/  
 -6.223



— Water level based on June 2005 measurements from the Lower Glen Rose

● West Bay® Well Sample Port

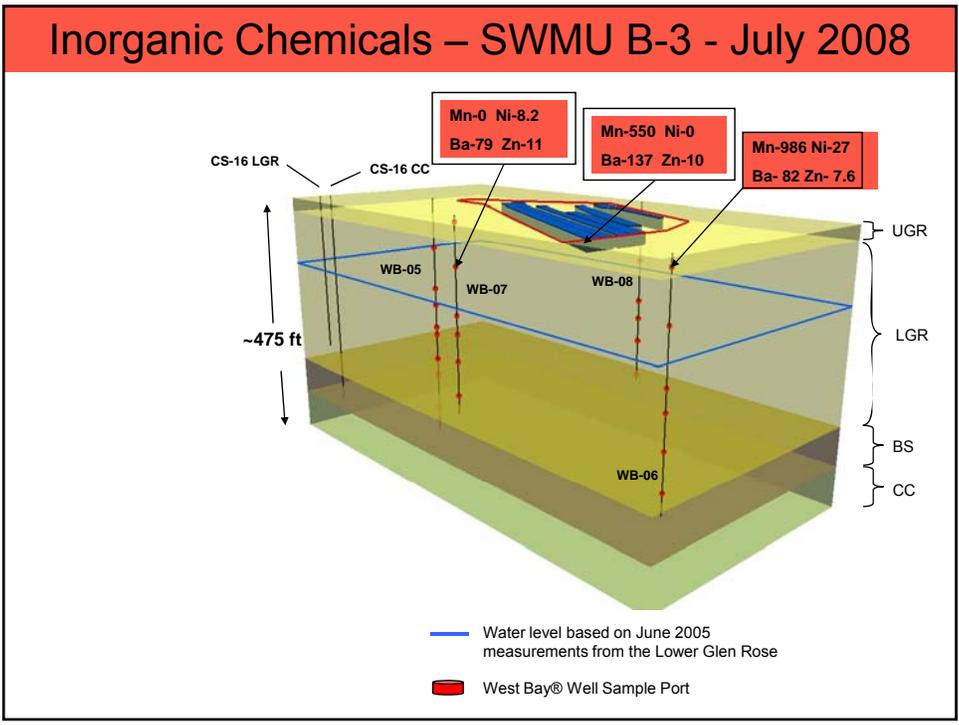
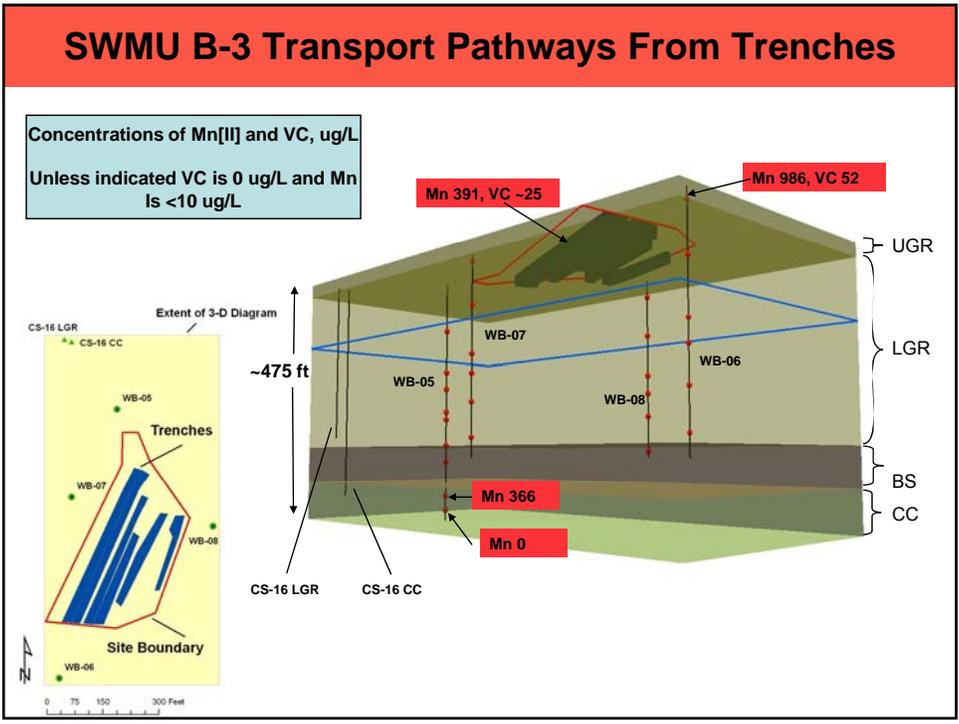
## SWMU B-3 O & H Isotope Data – November 2008

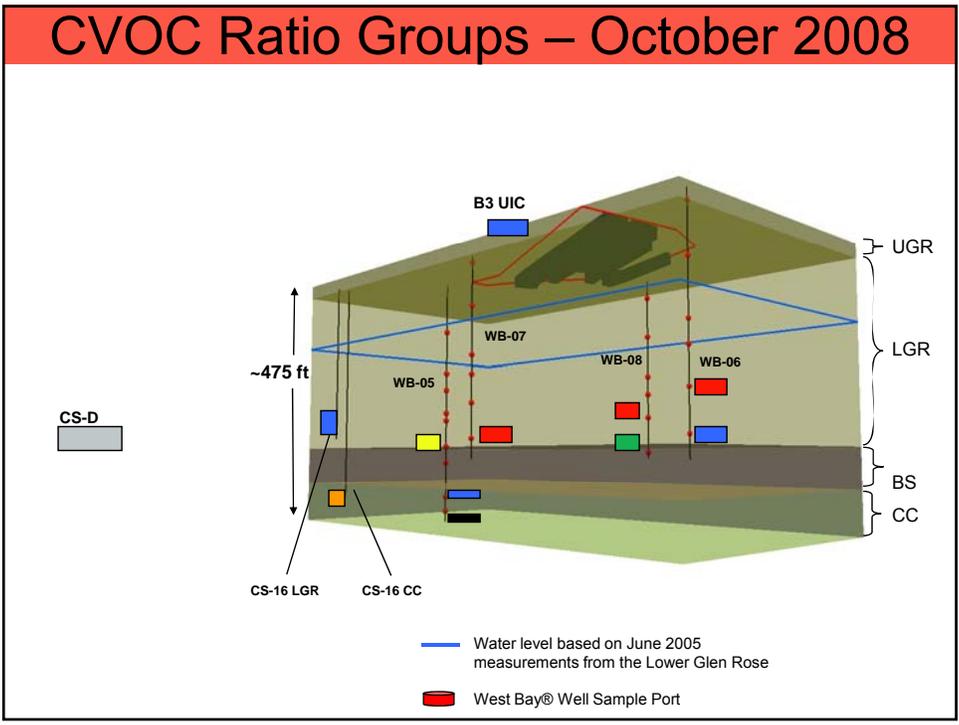
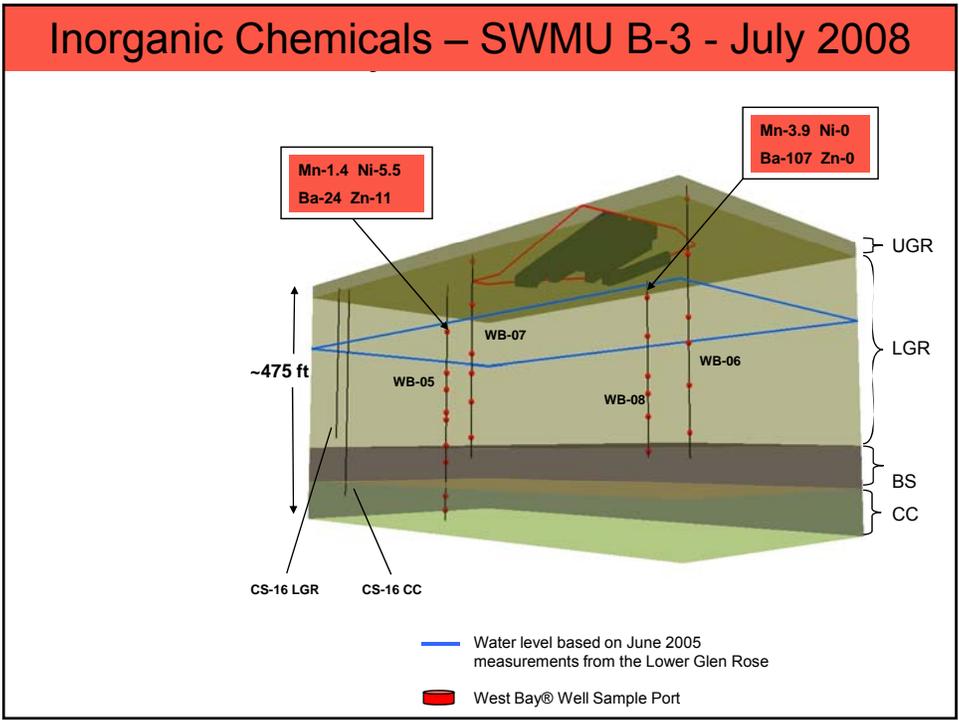


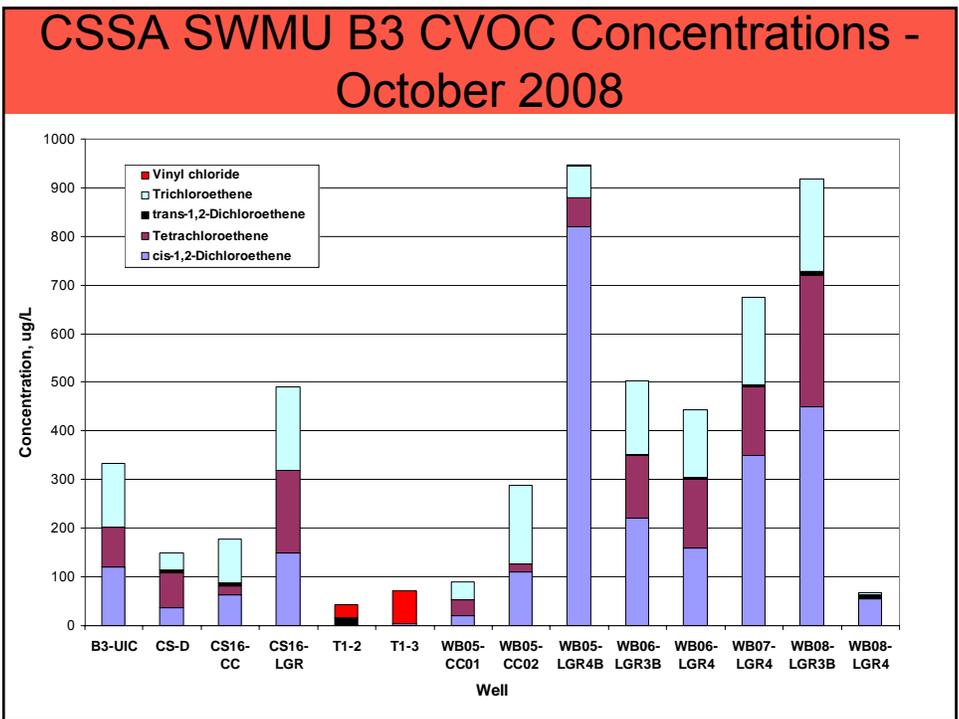
## Additional *In Situ* Degradation Pathways

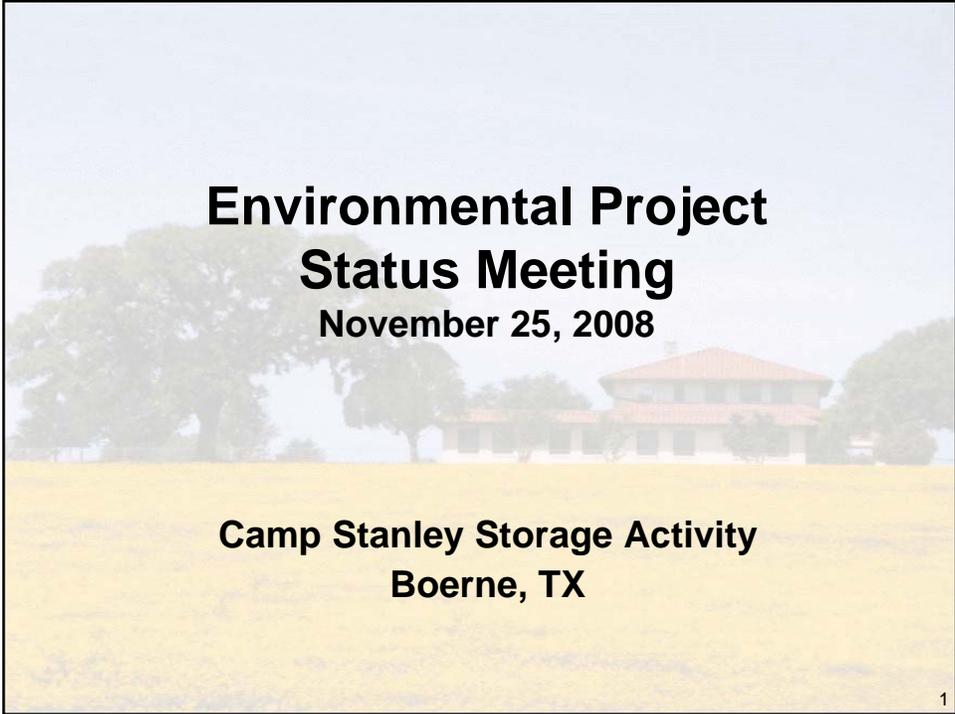
- Abiotic
  - $\text{PCE} \longrightarrow \text{Ethene}$  catalyzed by  $\text{Fe}[0]$  under reducing conditions
- Biotic
  - Anaerobic Oxidation
 
$$\text{VC} + \text{Mn}[\text{IV}] \xrightarrow{\text{microbial}} \text{CO}_2 + \text{Cl}^{-1} + \text{Mn}[\text{II}]$$

• What is the evidence for either pathway?









# **Environmental Project Status Meeting**

**November 25, 2008**

**Camp Stanley Storage Activity  
Boerne, TX**

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## **Agenda**

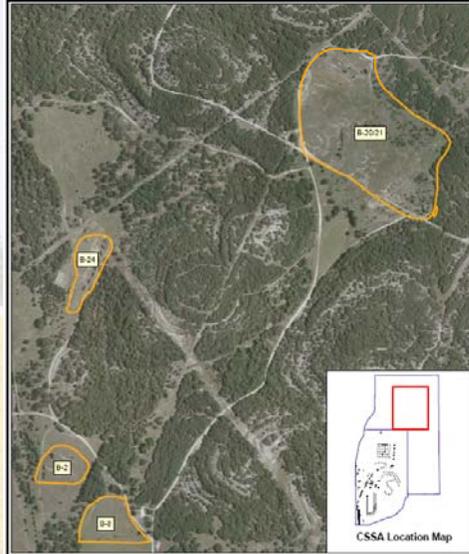
9:00 am – 10:00 am:	Groundwater Event Planning teleconference
10:00 am – 11:30:	North Pasture sites
11:30 am – 12:30 pm:	Lunch
12:30 pm – 2:00pm:	SWMU B-3
2:00 pm – 3:00 pm	AOC-65

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# North Pasture Current Plan

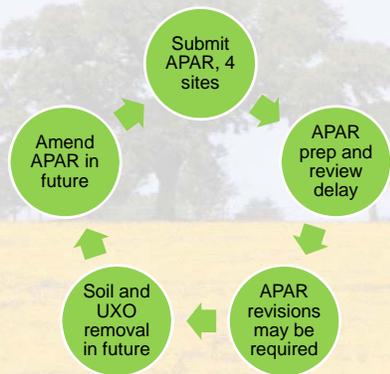
## (SWMUs B-2, B-8, B-20/21, and B-24)

- Combined Affected Property Assessment Report (APAR) under Texas Risk Reduction Program (TRRP)
- APAR for four sites
- 2008 investigations show metals impacted soils at 3 sites
- APAR would describe current conditions and recommend future cleanup
- Soil removals (B-8, B-20, B-24) and ordnance removal (B-20, B-24) would still be necessary

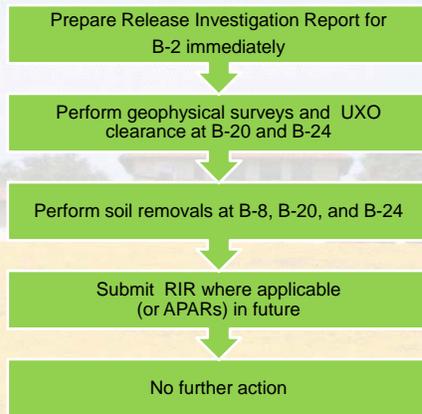


# Options

## Continue with 4-site combined APAR



## Perform remediation activities needed



## Revised Recommendation Outstanding Issues to Obtain Closures

- B-2 Release Investigation Report
- (All) Ecological risk assessment
- B-8 Soil removal above human health criteria  
Soil removal above ecological risk criteria
- B-20 UXO Clearance  
Soil removal above human health criteria  
Soil removal above ecological risk criteria
- B-24 Remove stockpiles  
UXO Clearance  
Soil removal above human health criteria  
Soil removal above ecological risk criteria
- (All) Submit APAR(s) when removals are complete

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B-2 pit



B-8 removal

A history of the four North Pasture sites currently under investigation including sampling efforts conducted in 2008.

## **NORTH PASTURE SITE HISTORIES AND CURRENT CONDITIONS**

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# SWMU B-2 History

- 1954?
  - Small arms ammunition burned in two trenches
- 1995
  - EM and GPR surveys performed
  - Anomalies identified
  - Soil borings sampled and soil gas survey conducted
- 1997
  - Excavated two trenches
  - No UXO identified
  - Stockpiles generated
- 2002
  - RCRA Facility Investigation (RFI) Report submitted
  - Stockpile sampling recommended
- 2003  
2004
  - Additional trench excavations conducted
  - Test pit excavations conducted
  - Confirmation samples collected
- 2005
  - Data evaluated; no Closure Report submitted
- 2008
  - Excavation and confirmation sampling
  - No COCs above Tier 1 PCLs



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# SWMU B-2 Recommendations

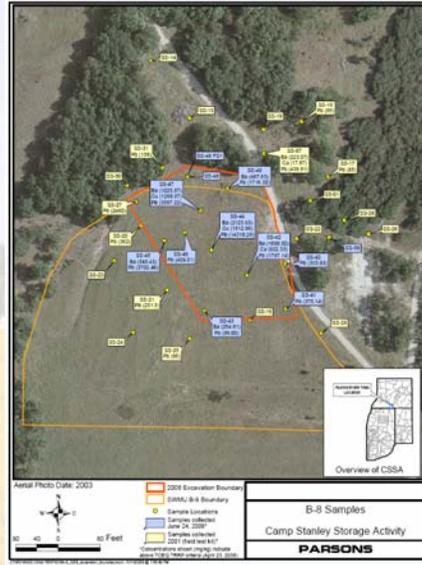
- No COCs remain above Tier 1 PCLs
- No ordnance is present.
- Individual site closure is possible under a Release Investigation Report



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# SWMU B-8 History

- ?
  - Small arms ammunition disposal area
  - Ammunition burned on concrete platform
- 1995
  - Geophysical survey identified two anomalies
- 1996
  - Soil borings sampled
- 1997
  - Excavated one anomaly
  - Removed concrete and stockpiled soils
- 2000
  - Soil borings re-sampled
  - Stockpile sampling performed
- 2002
  - RFI Report Submitted
- 2003
  - Surface soil samples collected
  - Geophysical survey conducted
  - RFI Report Addendum Submitted
- 2008
  - Excavation and sampling
  - Soils removed to East Pasture range; PIMS treatment
  - Additional investigation needed



# SWMU B-8 Recommendations

- Current stockpile soils PIMS treatment and soil removal
- Impacted soils remain
- Conduct soil removal
- Perform confirmation soil sampling
- Delay APAR (group or individual site) until further removal



# SWMU B-20 History

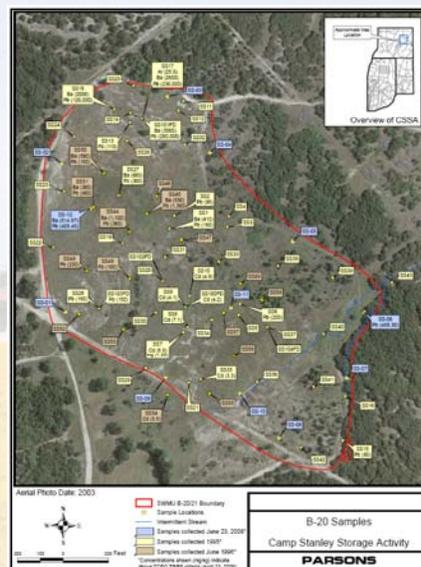
- 1946 - ?
  - Open burn/open detonation area
- 1994
  - Geophysical surveys performed
  - UXO removal, northern portion
  - Soil, surface water and sediment sampled
- 1995
  - Remedial Investigation Report Submitted
- 1996
  - Soil sampling and UXO removal conducted
  - Addendum to Remedial Investigation Report submitted
- 1997
  - Additional UXO removal
  - Northern area sifted for UXO removal
  - Treatability studies conducted
- 2000
  - Soils re-sampled
- 2002
  - Conducted PIMS treatability study
  - Submitted RFI Report in July 2002
- 2008
  - Surface soil samples collected
  - **Additional soil removal and UXO clearance needed**



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# SWMU B-20 Recommendations

- Disposal of PIMS treated soilpiles
- Conduct geophysical survey
- Conduct soil removal
- UXO clearance
- Perform confirmation soil sampling
- Surface sweep for small arms/MD
- Delay APAR (group or individual site) until future removals complete



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# SWMU B-24 History

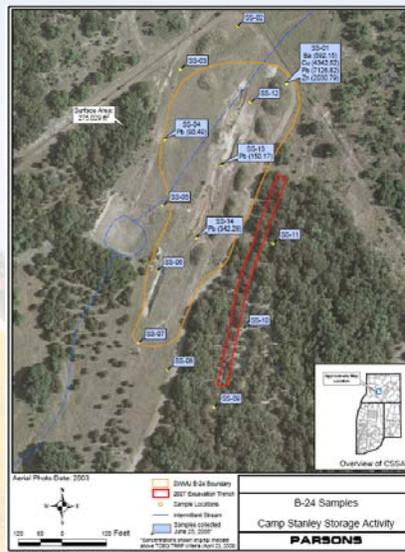
- ? • Trenches used for disposal
- 1995 • EM surveys performed  
• Three anomalies identified
- 1997 • UXO Clearance performed  
• Trenches excavated  
• Soil samples conducted
- 2000 • Soil borings re-sampled  
• Stockpile soils sampled
- 2002 • RFI Report submitted
- 2007 • Additional ditch investigated to east, slit trenching
- 2008 • Impacted soils remain; stockpiles remain



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# SWMU B-24 Recommendations

- Non-hazardous soils to range berm
- Munitions scrap and rock pile removal
- Impacted soils remain
- Conduct soil removal
- Conduct UXO clearance
- Perform confirmation soil sampling
- Submit APAR (group or individual site)



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# TRRP Closure Options

## Remedy Standard A

- Residential standards
- No institutional controls (deed notice) required

## Remedy Standard B

- Commercial/Industrial standards
- Deed notice required **unless:**
  - “technically impracticable” to obtain Remedy Standard A
  - And/or “non-innocent landowner refuses to consent to filing of a deed notice”
- Financial Assurance required to meet post-response action care

### Recommend: Remedy Standard A

Removal of affected soils (to human health and ecological criteria) and ordnance removal

Surface sweep to remove small arms debris/remnants to the extent technically practical

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# Tasks to Complete for Closure

*Goal: present these options to regulators Dec. 11th*

<u>Site</u>	<u>Current*</u>	<u>Future</u>
B-2	Submit RIR (15K)	
	All	Ecological risk assessment
B-8	PIMS, other (DY02)	Soil removal, APAR
B-20	Geophysical (120K) Intrusive** (48K)	Soil and UXO removal, APAR
B-24	Geophysical (20K) Intrusive** (9K)	Stockpiles, soil & UXO removal, APAR

\*Approx 200K remaining DY01 for current efforts

\*\* Intrusive investigation of 20% of anomalies for characterization only

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