

# CIMARRON ENVIRONMENTAL RESPONSE TRUST

## *Facility Decommissioning Plan – Rev 2*

DP SECTION 8 – PLANNED DECOMMISSIONING ACTIVITIES

DP SECTION 12 – ENVIRONMENTAL MONITORING & CONTROL

DP SECTION 9 – SCHEDULE

DP SECTION 16 – FINANCIAL ASSURANCE

Note: Information provided herein consists of partial or incomplete images and information taken from multiple other data sources. It is provided for summary purposes only and should not be relied upon as technically complete or comprehensive.

March 24, 2021

## DP Section 8 – Planned Decommissioning Activities<sup>2</sup>

8.1 – Overview

8.2 – Groundwater Extraction

8.3 – Water Treatment

8.4 – Treated Water Injection

8.5 – Treated Water Discharge

8.6 – In-Process Monitoring

8.7 – Waste Management

8.8 – Post-Remediation Monitoring

8.9 – Demobilization

8.10 – Ongoing Remediation



## 8.1 – Groundwater Remediation Overview

### Phase I

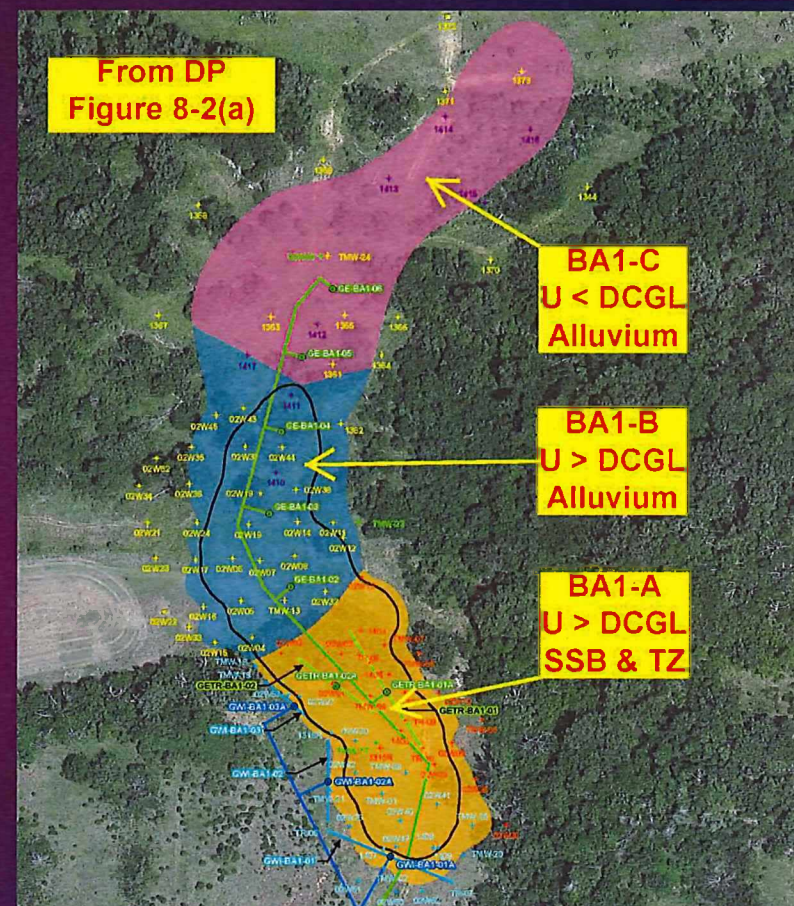
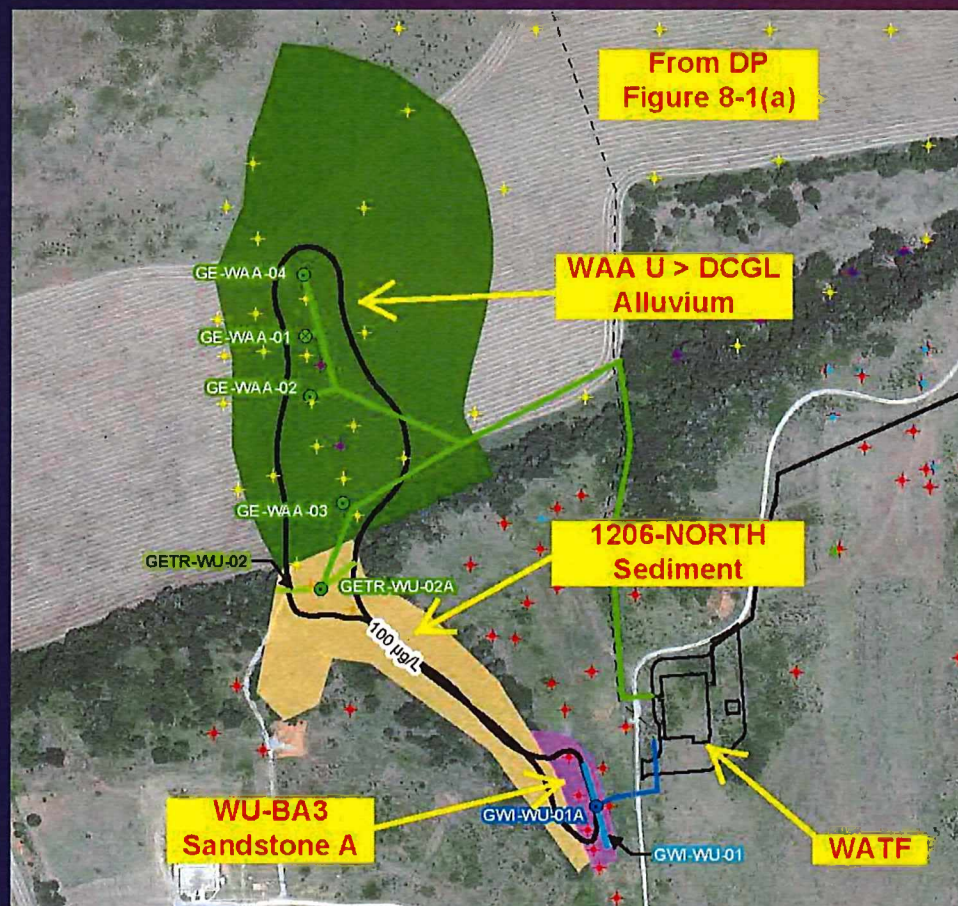
- Only recover groundwater from areas in which  $U > \text{DCGL}$ .
- Treat only for uranium.
- Maintain separate injection for BA1 and WA treated water.
- Phase I ends when all wells yield uranium  $< \text{DCGL}$ .

### Phase II – dependent on remaining funding

- Options – Stop operating, continue with existing systems, or add infrastructure and expand operations.
- Operations cease and post-remediation monitoring begins when funding dictates.



## 8.2 – Groundwater Extraction









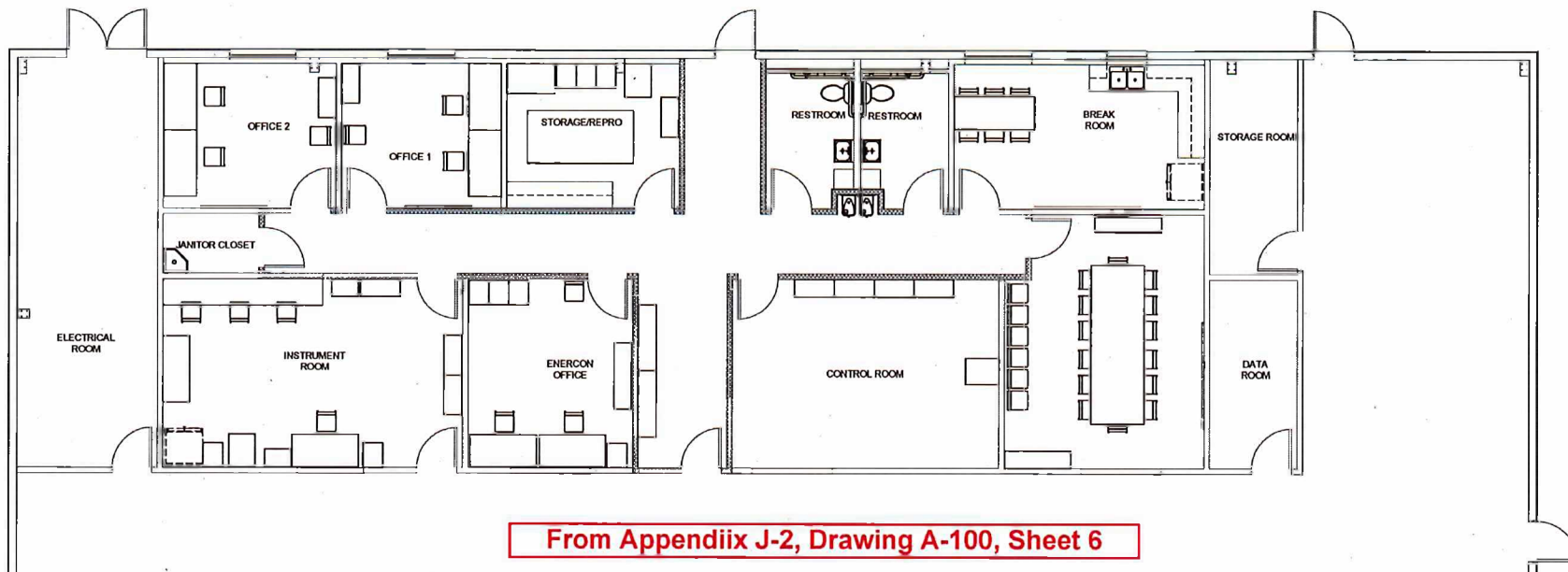




## 8.3 – Water Treatment

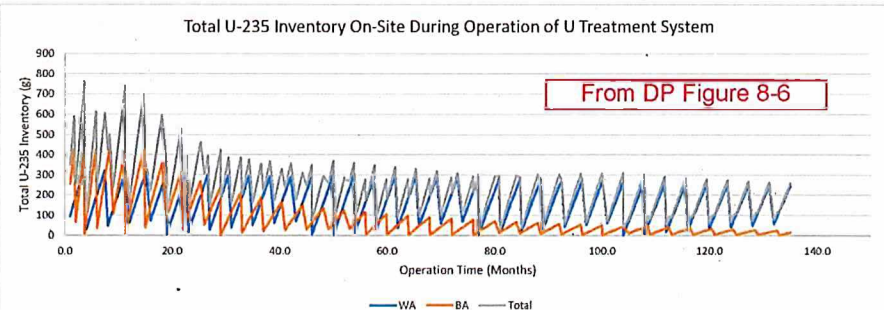
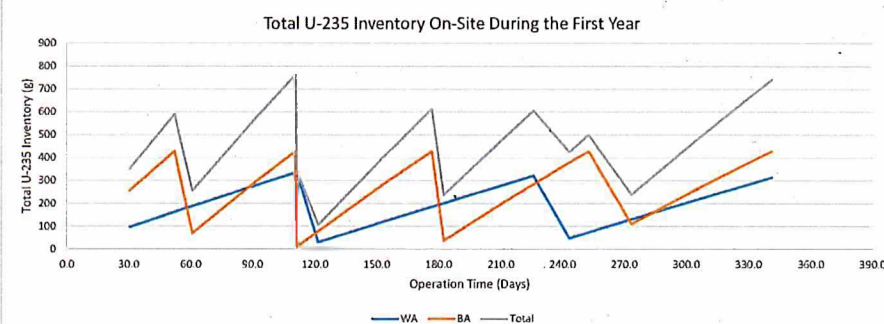
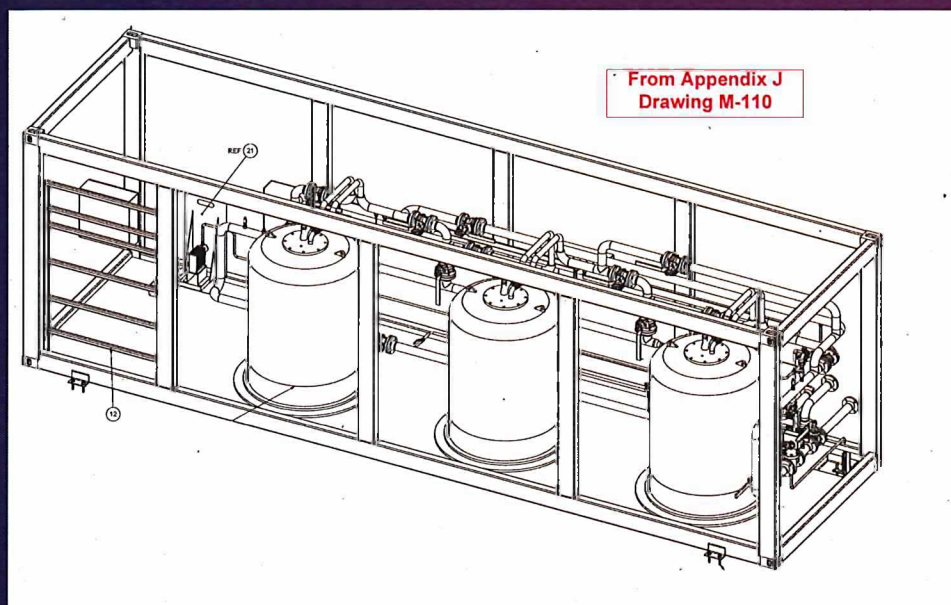
### WATF Office Area

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## 8.3 – Water Treatment

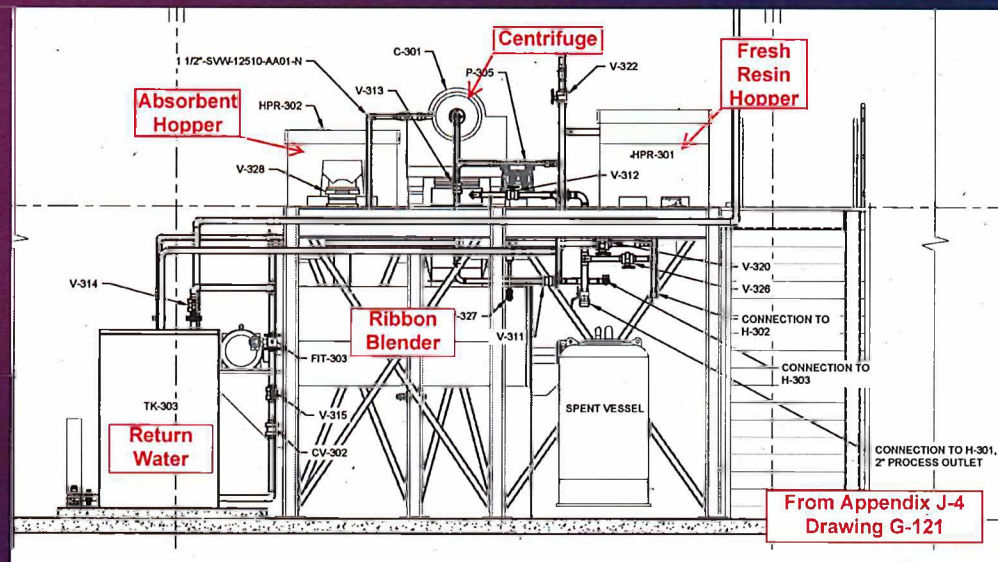
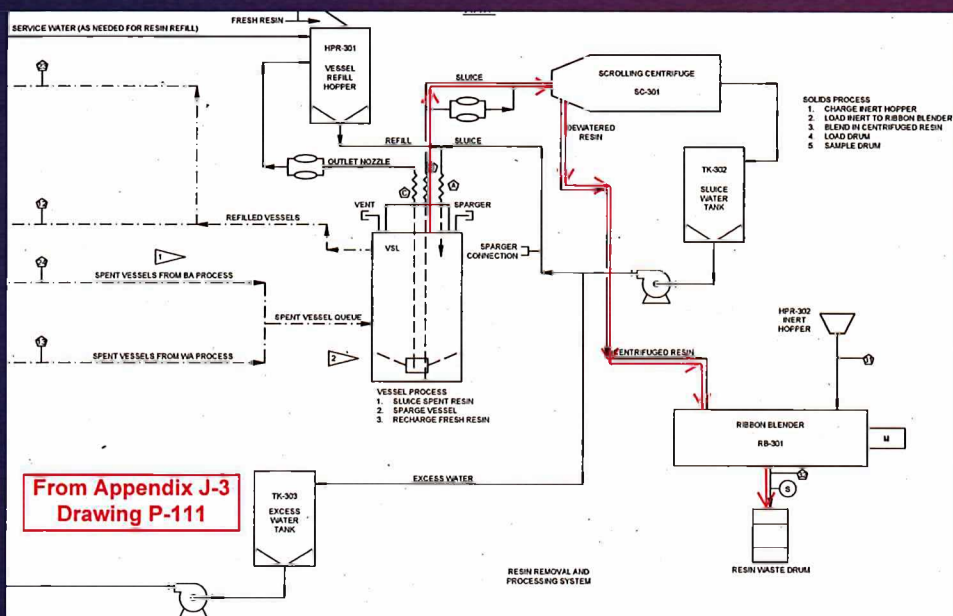
### Uranium Removal



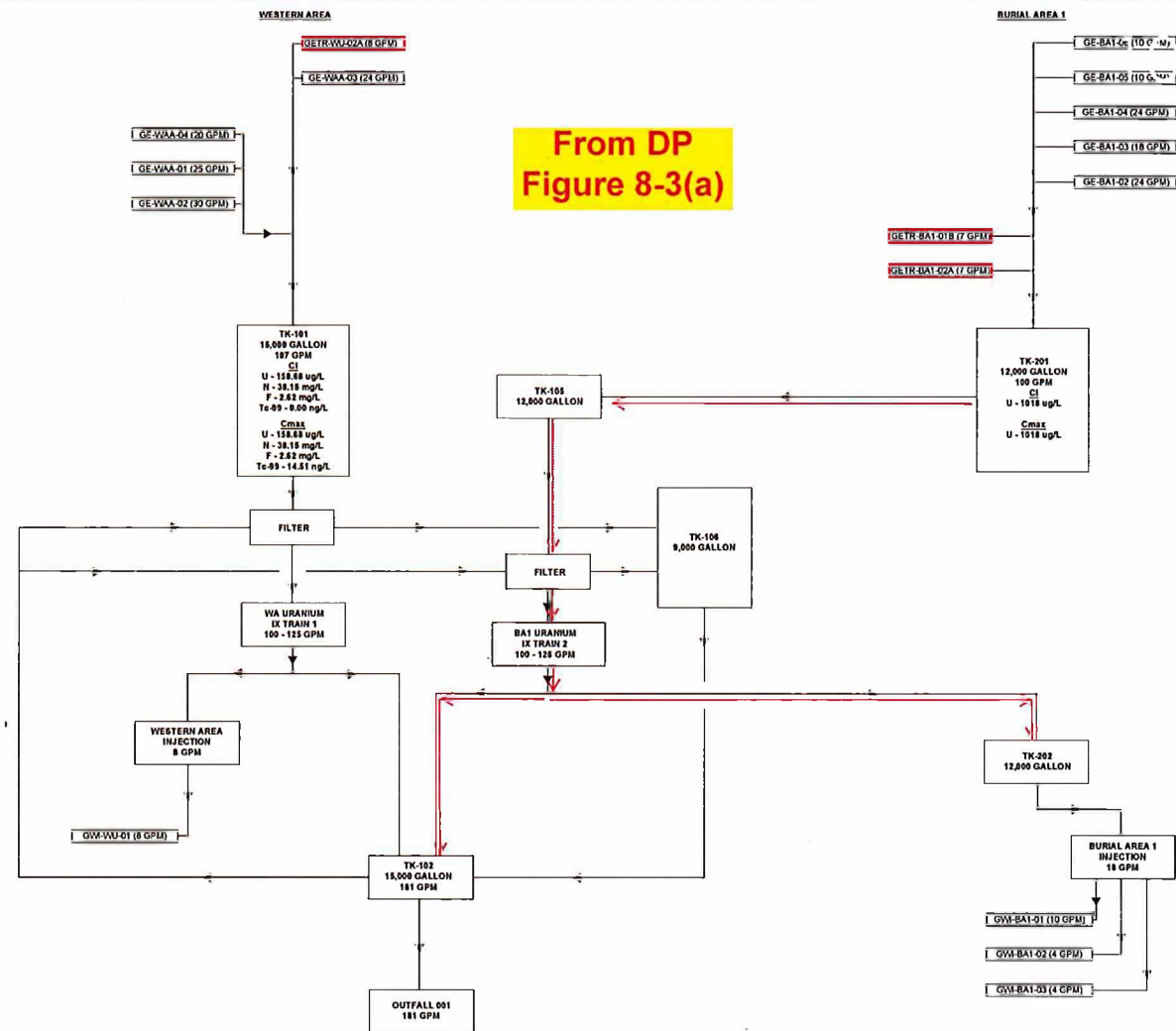


## 8.3 – Water Treatment

### Spent Resin Processing



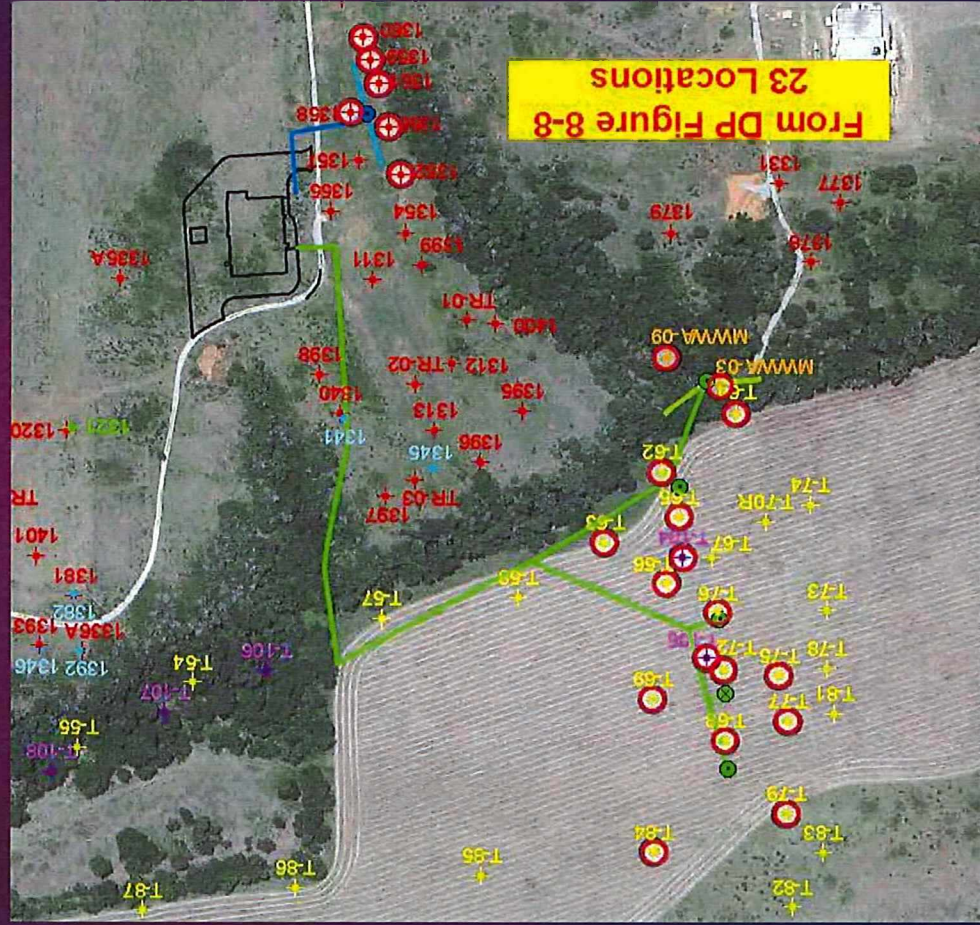
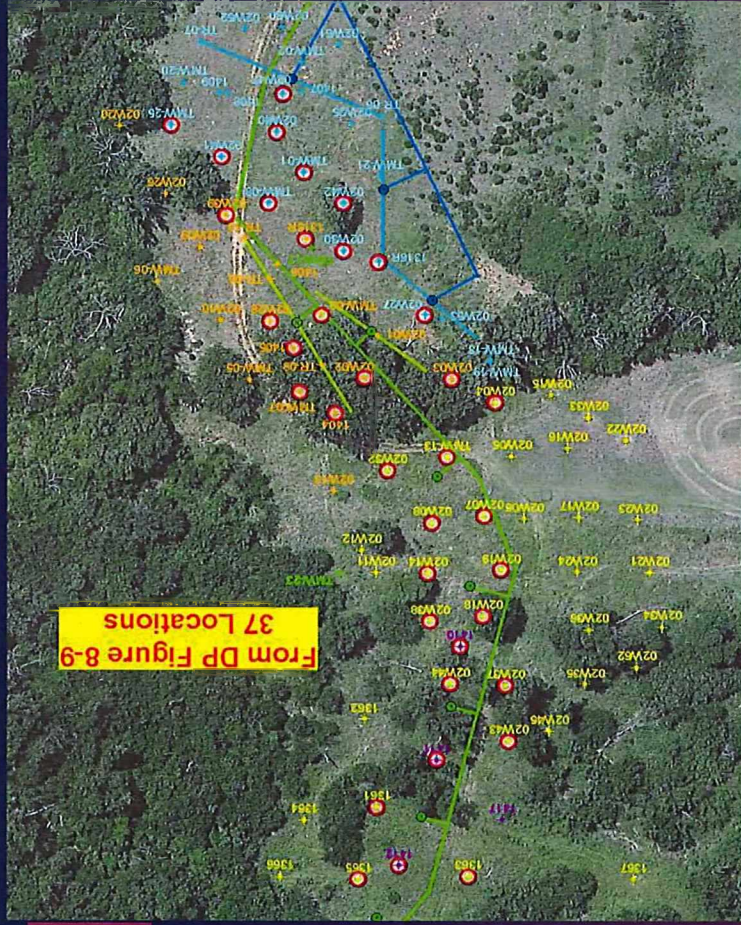
# 8.4 & 8.5 – Treated Water Injection & Discharge





# 8.6 – In-Process Monitoring

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## 8.6 – In-Process Monitoring

Process	Sampled Material	pH	U-235 & U-238	Nitrate	Fluoride	Tc-99
Ion Exchange Skid for Western Area Groundwater	WA Train Influent (pre-acid addition)	X	X	X	X	X
	WA Train Influent (post-acid addition)	X				
	WA Train Lead Vessel Effluent	First Cycle	X			X
		Second Cycle	X			X
		Third Cycle	X			X
	WA Train Lag Vessel Effluent	First Cycle	X			X
		Second Cycle	X			X
		Third Cycle	X			X
	WA Train Polish Vessel Effluent	First Cycle	X	X		X
		Second Cycle	X	X		X
		Third Cycle	X	X		X
	BA Train Influent (pre-acid addition)	X	X	X	X	X
	BA Train Influent (post-acid addition)	X				
Ion Exchange Skid for BA1 Groundwater	BA Train Lead Vessel Effluent	First Cycle	X			X
		Second Cycle	X			X
		Third Cycle	X			X
	BA Train Lag Vessel Effluent	First Cycle	X			X
		Second Cycle	X			X
		Third Cycle	X			X
	BA Train Polish Vessel Effluent	First Cycle	X	X		X
		Second Cycle	X	X		X
		Third Cycle	X	X		X
	Effluent	WATF Effluent in Tank 102*	X	X	X	X

From DP  
Table 8-4



## 8.6 – In-Process Monitoring

Process	Sampled Material	Flow	pH
Ion Exchange Skids	WA Influent (pre-acidification)		X
	WA Influent (post-acidification)	X	X
	BA1 Influent (pre-acidification)		X
	BA1 Influent (post-acidification)	X	X
Discharge	Outfall 001	X	

From DP  
Table 8-3

Location	Sample ID	Flow	pH	U-235 & U-238	Nitrate	Fluoride
Combined Discharge	Outfall 001	X				
			X	X	X	X
BA1 Injection	GWI-BA1-01A	X				
	GWI-BA1-02A	X				
	GWI-BA1-03A	X				
	Composite		X	X	X	X
WA Injection	GWI-WU-01A	X				
			X	X	X	X

From DP Table 8-5

## 8.7 – Waste Management

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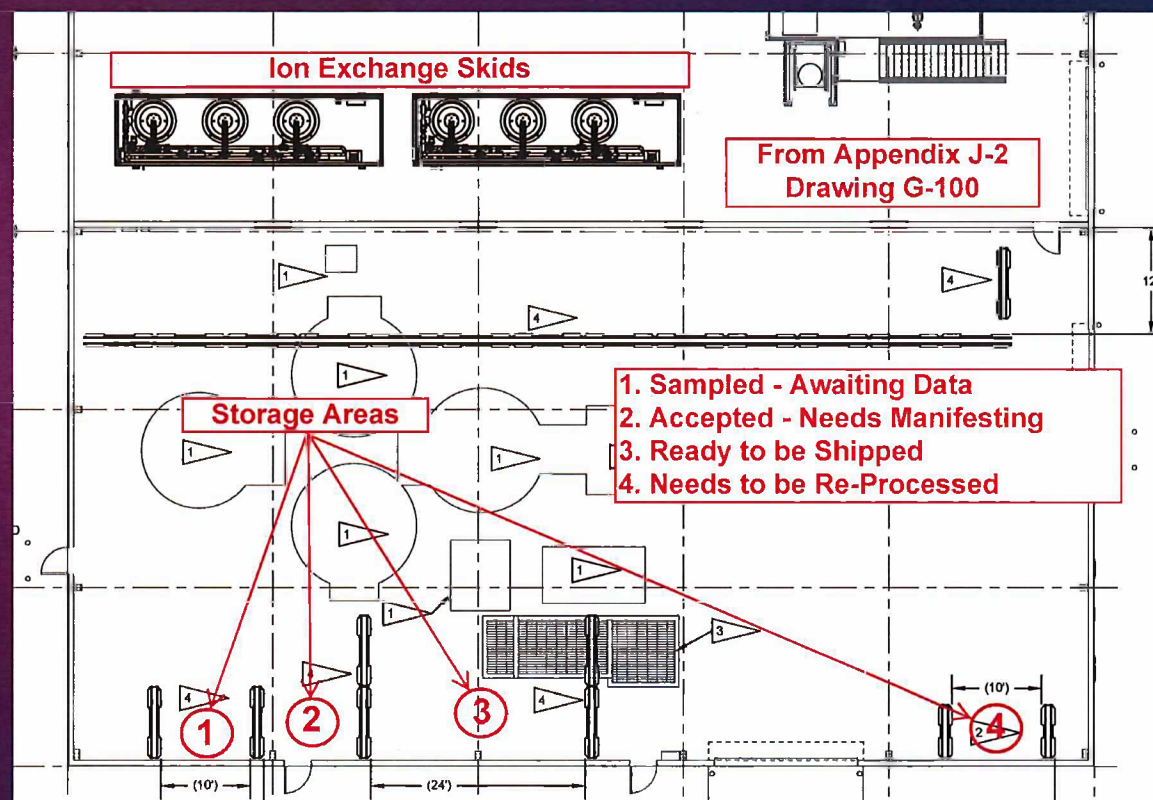
Sampled Material		Sample ID
Resin Mixture from BA1 Ion Exchange Skid	1st Batch of Spent Resin	BA1-01-01 BA1-01-02 ↓
		BA1-01-XX
	2nd Batch of Spent Resin	BA1-02-01 BA1-02-02 ↓
		BA1-02-XX
Resin Mixture from WA Ion Exchange Skid	1st Batch of Spent Resin	WA1-01-01 WA1-01-02 ↓
		WA1-01-XX
	2nd Batch of Spent Resin	WA1-02-01 WA1-02-02 ↓
		WA1-02-XX

From DP  
Table 8-6

Note: Once homogeneity of uranium in processed resin has been established, one sample per resin vessel will suffice for waste characterization.

### Note:

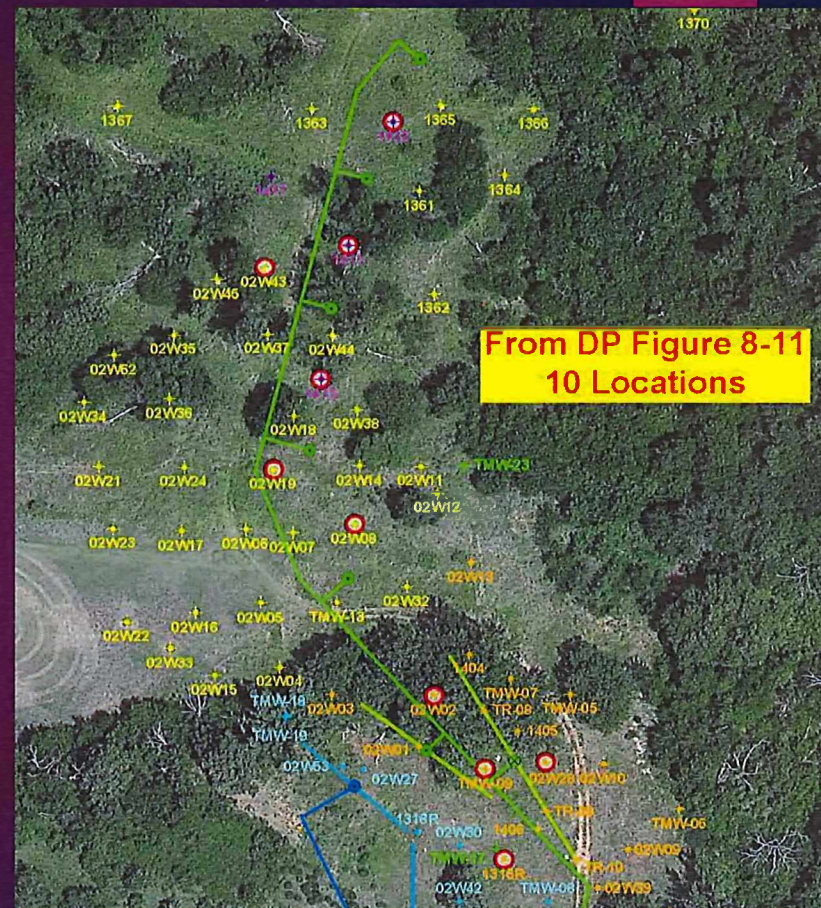
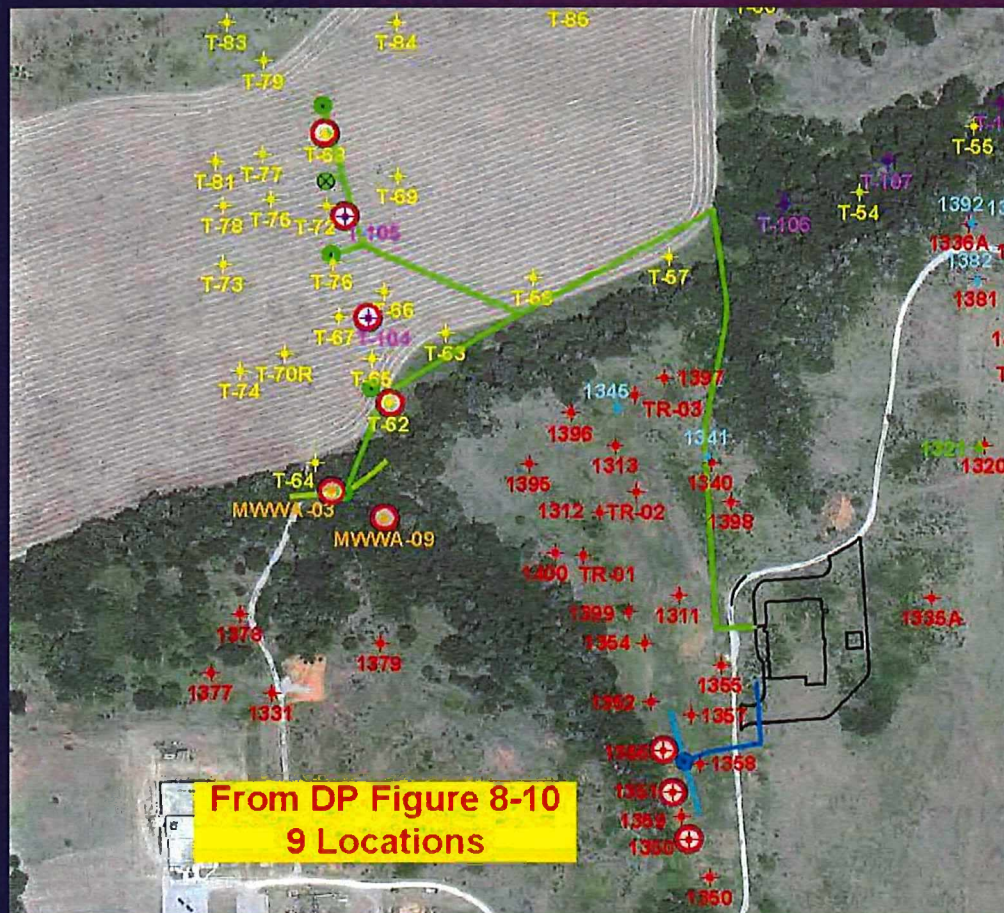
Filtered sediment is delivered with filter backwash to the effluent tank for discharge.





## 8.8 – Post-Remediation Monitoring

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## 8.9 – Demobilization & 8.10 – Ongoing Remediation

### Demobilization

- Release Surveys
- Equipment May or May Not be Removed
- Removal is not Included in Cost Estimates

### Ongoing Remediation

- Dependent Upon Remaining Funding
- Determination Made by EPM & Beneficiaries



## DP Section 12 – Environmental Monitoring & Control<sup>17</sup>

### Environmental Monitoring

- In-process groundwater monitoring replaces RPP Section 15

### Effluent Monitoring

- Potential for air effluents addressed by air sampling during resin processing
- Discharge monitoring per OPDES Permit
- Injection monitoring per Underground Injection Control Program

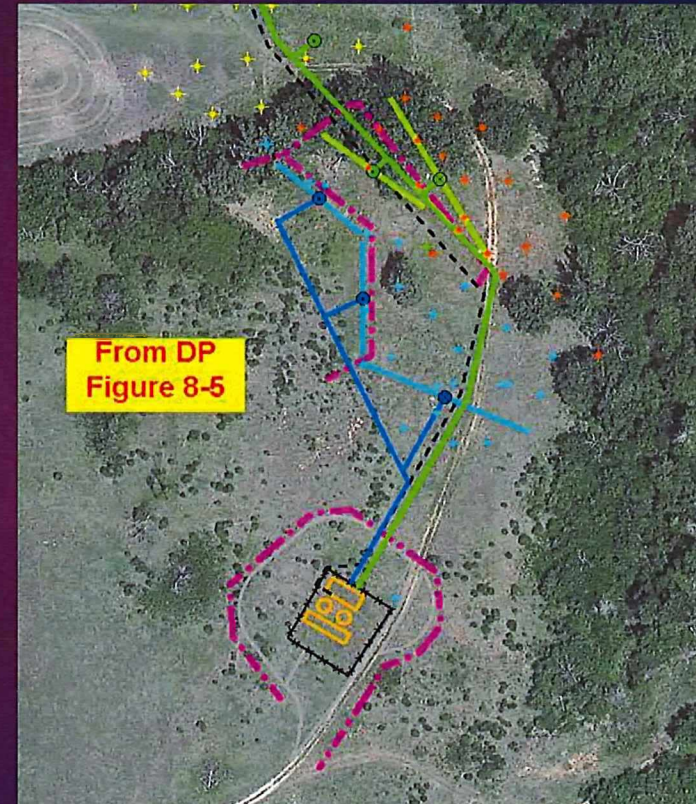
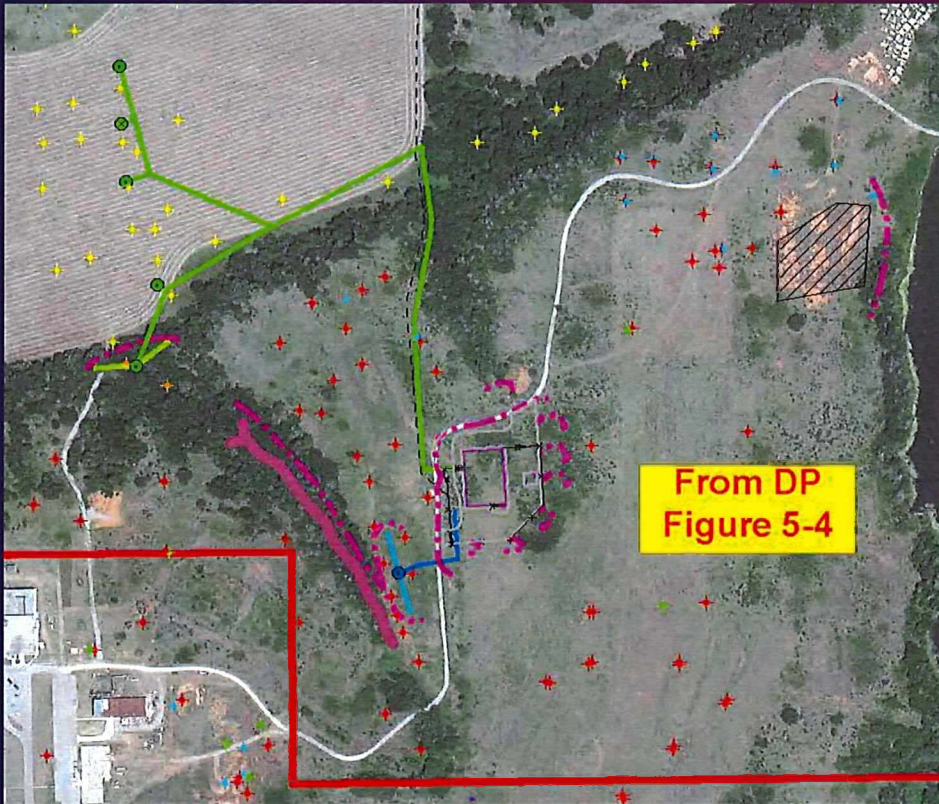
### Stormwater Control

- During Construction
- During Operations



# DP Section 12 – Environmental Monitoring & Control<sup>18</sup>

## Stormwater Control





## DP Section 9 – Schedule & DP Section 16 – Financial Assurance

### Presented by Phase

- Pre-Construction
- Construction
- Remediation
- Post-Remediation

## Pre-Construction Schedule

(Summarized from DP Figure 9-1)

[illegible]



# Pre-Construction Costs

(Summarized from DP Table 16-1)

Description	2021	2022	Q1-Q2 2023
<b>Administration</b>			
<b>Total</b>	<b>\$216,000</b>	<b>\$216,000</b>	<b>\$108,000</b>
<b>License Compliance</b>			
<i>EPM</i>	<i>\$160,000</i>	<i>\$160,000</i>	<i>\$80,000</i>
<i>Enercon</i>	<i>\$327,924</i>	<i>\$377,113</i>	<i>\$188,556</i>
<i>Burns &amp; McDonnell</i>	<i>\$100,000</i>	<i>\$80,000</i>	<i>\$40,000</i>
<i>Annual Environmental</i>	<i>\$14,800</i>	<i>\$14,800</i>	<i>\$14,800</i>
<b>Total</b>	<b>\$602,724</b>	<b>\$631,913</b>	<b>\$323,356</b>
<b>Federal Agency Fees</b>			
<b>Total</b>	<b>\$800,000</b>	<b>\$800,000</b>	<b>\$400,000</b>
<b>Decommissioning</b>			
<i>EPM</i>	<i>\$120,000</i>	<i>\$120,000</i>	<i>\$60,000</i>
<i>Burns &amp; McDonnell</i>	<i>\$1,030,000</i>	<i>\$630,000</i>	<i>\$230,000</i>
<i>Enercon</i>	<i>\$205,391</i>	<i>\$236,200</i>	<i>\$118,100</i>
<i>Veolia</i>	<i>\$668,462</i>	<i>\$542,640</i>	<i>\$243,000</i>
<b>Total</b>	<b>\$2,023,853</b>	<b>\$1,528,840</b>	<b>\$651,100</b>
<b>State Agency Fees</b>			
<b>Total</b>	<b>\$36,000</b>	<b>\$36,000</b>	<b>\$18,000</b>

**Total Preconstruction Phase Costs      \$3,678,577      \$3,212,753      \$1,500,456**

# Construction Schedule

(Summarized from Figure 9-2)

Activity	2023							2024		
	Q2	Q3			Q4			Q1		
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Mobilize, Clear & Grub, Install BMPs										
Install Extraction Wells & Trenches										
Install Injection Wells & Trenches										
Excavate & Backfill 1206 Drainage										
Install Utilities, Discharge, & Outfall										
Grading for WATF, BA1 Facilities										
Construct WATF Building										
Install Treatment & Waste Processing Systems										
Construct BA1 Facilities										
Install Electric, Water, and Communications										
Startup and Commisison										

Note: Start and Finish Times are Approximate and Are Intended to Show Sequencing of Tasks



# Construction Costs

(Summarized from  
DP Table 16-2)

Description	Q3-Q4 2023	Q1 2024
<b>Administration</b>		
<b>Total</b>	<b>\$108,000</b>	<b>\$54,000</b>
<b>License Compliance</b>		
EPM	\$100,000	\$50,000
Enercon	\$326,812	\$163,406
Burns & McDonnell	\$40,000	\$20,000
<b>Total</b>	<b>\$466,812</b>	<b>\$233,406</b>
<b>Federal Agency Fees</b>		
<b>Total</b>	<b>\$150,000</b>	<b>\$75,000</b>
<b>Decommissioning</b>		
EPM Support	\$70,000	\$35,000
Enercon Support	\$118,100	\$59,050
Veolia Support (includes startup)	\$415,000	\$142,000
Burns & McDonnell Support (includes startup)	\$70,000	\$283,590
<b>Total Contractor Support Cost</b>	<b>\$673,100</b>	<b>\$519,640</b>
Site Civil (includes BA1 and WATF civil)	\$1,849,500	\$3,590,205
Site Electrical and Controls	\$366,520	\$711,480
Burial Area #1 Facility	\$240,058	\$123,666
Western Area Treatment Facility	\$4,650,028	\$1,343,192
<b>Direct Capital Costs</b>	<b>\$7,106,106</b>	<b>\$5,768,543</b>
<b>Indirect Capital Costs (Direct Costs X 36%)</b>	<b>\$2,559,137</b>	<b>\$2,076,990</b>
<b>Total Decommissioning Cost</b>	<b>\$10,338,343</b>	<b>\$8,365,173</b>
<b>State Agency Fees</b>		
<b>Total</b>	<b>\$16,000</b>	<b>\$8,000</b>

**Total Construction Phase Costs**

**\$11,079,155**

**\$8,735,579**

# Remediation Schedule

(Summarized from Figure 9-3)

Remediation Area	Time (Months)	2024			2025				2027		2028		2030		2031		2034		2036		
		Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 1	Q 2	Q 2	Q 3	
BA1-A	150	Time to Reduce Uranium to < NRC Criterion																			
BA1-B	36	Time to Reduce Uranium to < NRC Criterion																			
Water Treatment	121	Time Uranium Treatment System Operates <sup>1</sup>																			
Water Pumping & Injection	150	Time Pumping & Injection Continues																			
WAA U>DCGL	147	Time to Reduce Uranium to < NRC Criterion																			
1206 North	5		← Time to Reduce Uranium to < NRC Criterion																		
WU-BA3	49	Time to Reduce Uranium to < NRC Criterion																			
Water Pumping & Treatment	147	Time Pumping & Uranium Treatment System Operates																			
WU-BA3 Injection	83	Treated Water Injection <sup>2</sup>																			

## Notes:

- Treatment in BA1 Ends Before Remediation Ends
- Injection in BA3 Continues Until U < MCL in BA3



# Remediation Costs

(Summarized)

Description	Q2-Q4 2024	2025	2026-2034		2035	Q1-Q3 2036
			Average	Total		
Administration						
EPM Support	\$135,000	\$180,000	\$180,000	\$1,620,000	\$180,000	\$135,000
Other Costs	\$27,000	\$36,000	\$36,000	\$324,000	\$36,000	\$27,000
Total	\$162,000	\$216,000	\$216,000	\$1,944,000	\$216,000	\$162,000
License Compliance						
EPM Support	\$150,000	\$170,000	\$160,000	\$1,440,000	\$160,000	\$120,000
Enercon Support	\$477,298	\$636,397	\$636,397	\$5,727,570	\$636,397	\$477,298
Burns & McDonnell Support	\$60,000	\$80,000	\$80,000	\$720,000	\$80,000	\$60,000
Total	\$687,298	\$886,397	\$876,397	\$7,887,570	\$876,397	\$657,298
NRC Fees						
	\$300,000	\$280,000	\$240,000	\$2,160,000	\$240,000	\$180,000
Decommissioning						
EPM Support	\$105,000	\$125,000	\$120,000	\$1,080,000	\$120,000	\$90,000
Remediation Operations	\$733,676	\$964,121	\$964,010	\$8,676,094	\$962,794	\$722,908
Resin & Resin Disposal	\$223,246	\$223,246	\$180,179	\$1,621,610	\$199,751	\$99,094
Total	\$1,061,922	\$1,312,367	\$1,264,189	\$11,377,704	\$1,282,545	\$912,002
State Agency Fees						
	\$27,000	\$36,000	\$36,000	\$324,000	\$36,000	\$27,000

**Total Remediation Phase Costs**      **\$2,238,220**    **\$2,730,764**    **\$2,632,586**    **\$23,693,274**    **\$2,650,942**    **\$1,938,299**





# Post-Remediation & Life-Cycle Costs

(Summarized from DP Table 16-3)

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Description	Q4 2036	2037	2038	Q1-Q3 2039	Q4 2039	Q1-Q3 2040	Life of Project Subtotal / Total
Administration							
EPM Fee	\$45,000	\$180,000	\$180,000	\$135,000	\$45,000	\$135,000	\$4,266,000
Outside Services – BMcD, legal support	\$5,000	\$20,000	\$20,000	\$15,000	\$5,000	\$15,000	
Other Direct Costs	\$4,000	\$16,000	\$16,000	\$12,000	\$4,000	\$12,000	
Total	\$54,000	\$216,000	\$216,000	\$162,000	\$54,000	\$162,000	
License Compliance							
EPM	\$50,000	\$200,000	\$200,000	\$150,000	\$25,000	\$75,000	\$15,414,866
Enercon	\$81,981	\$327,924	\$327,924	\$245,943	\$81,981	\$245,943	
Burns & McDonnell	\$10,000	\$40,000	\$40,000	\$20,000	\$10,000	\$30,000	
Total	\$141,981	\$567,924	\$567,924	\$415,943	\$116,981	\$350,943	
NRC Fees							
	\$50,000	\$200,000	\$200,000	\$150,000	\$60,000	\$180,000	\$6,225,000
Decommissioning							
EPM Support	\$35,000	\$140,000	\$140,000	\$105,000	\$25,000	\$75,000	\$39,941,980
Maintenance Allowance	\$20,000	\$80,000	\$80,000	\$60,000	\$20,000	\$60,000	
Post-Remediation Groundwater Monitoring	\$5,275	\$21,100	\$21,100	\$15,825			
Final Status Survey Plan		\$21,995	\$7,332				
Final Status Survey			\$14,600	\$43,801			
Final Status Survey Report				\$28,801	\$9,600		
License Termination						\$58,701	
Total	\$60,275	\$263,095	\$263,032	\$253,427	\$54,600	\$193,701	
State Agency Fees							
	\$8,000	\$32,000	\$32,000	\$24,000	\$10,000	\$30,000	\$700,000

**Total Post-Remediation Phase Costs**      **\$314,256**    **\$1,279,019**    **\$1,278,956**    **\$1,005,370**    **\$295,581**    **\$916,644**    **\$66,547,846**

# QUESTIONS??