

Evaluation of Contaminant Transport for the 200-BP-5 and 200-PO-1 Operable Units Feasibility Study Evaluation of Remedial Alternatives

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

CH2MHILL
Plateau Remediation Company

**P.O. Box 1600
Richland, Washington 99352**

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APPROVED

By Janis D. Aardal at 12:58 pm, Aug 13, 2019

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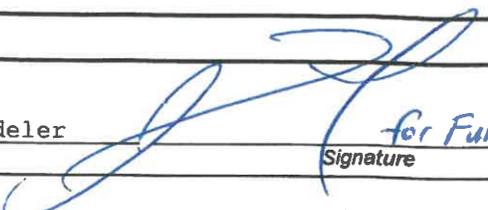
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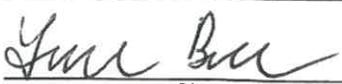
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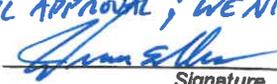
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Terms

CHPRC	CH2M HILL Plateau Remediation Company
DOE	U.S. Department of Energy
DWS	drinking water standard
ECF	environmental calculation file
F&T	fate and transport
FS	Feasibility Study
HISI	Hanford Information System Inventory
P&T	pump-and-treat
P2R	Plateau to River (model)
RI	Remedial Investigation
TEDF	Treated Effluent Disposal Facility

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1 Purpose

The calculation described in this Environmental Calculation File (ECF) is part of the combined Feasibility Study (FS) of groundwater remedial alternatives for the 200-BP-5 and 200-PO-1 Operable Units (collectively referred to herein as 200 East). The purpose of the FS is to provide a comparison of potential remedial actions for cleanup of groundwater in 200 East area of the U.S. Department of Energy's (DOE's) Hanford Site. The remedial actions evaluated in the FS are limited to pump-and-treat (P&T) alternatives. The method of evaluation is fate and transport (F&T) modeling. The outcome of the FS will be to determine if P&T is a viable remedial alternative and to provide a description of a feasible extraction and injection well configuration (including well locations and rates) that can be used as the basis for the design of such a system.

The objective of this modeling calculation is to provide a description of current and expected future groundwater contaminant concentrations with and without the effects of various P&T scenarios developed as part of the RI/FS process. The model was used to calculate the F&T of eight constituents. These include:

- For the 200-PO-1 FS: cyanide, tritium, strontium-90, iodine-129, technetium-99, nitrate, and uranium
- For the 200-BP-5 FS: tritium, strontium-90, iodine-129, technetium-99, nitrate, chromium, cyanide, and uranium

The P&T scenarios developed for assessing an effective cleanup strategy focused on technetium-99, uranium, and nitrate as the key drivers of risk. Given that multiple factors may impact constituent F&T, sensitivities of the calculation to initial contaminant distribution, potential for continuing vadose zone sources of constituents, and the potential influence of future liquid discharge at the Treated Effluent Disposal Facility (TEDF) were modeled for the range of P&T configurations.

2 Background

The F&T model used to perform simulations supporting the 200-East RI/FS is the Plateau to River (P2R) Model. This is the same model applied for evaluation of baseline future groundwater conditions in the Remedial Investigation (RI) reports for the 200-BP-5 and 200-PO-1 Operable Units (DOE/RL-2009-127, *Remedial Investigation Report 200-BP-5 Groundwater Operable Unit*, and DOE/RL-2009-85, *Remedial Investigation Report for the 200-PO-1 Groundwater Operable Unit*, respectively). The P2R Model is documented in CP-57037, *Model Package Report: Plateau-to River Groundwater Transport Model, Version 6.1.1* and ECF-HANFORD-13-0031, *Fate and Transport Modeling for Baseline Conditions for Remedial Investigation/Feasibility Studies of the 200-BP-5 and 200-PO-1 Groundwater Operable Units*. Model extents are shown in Figure 2-1. Detailed information concerning the model construction, calibration, and application for baseline conditions are found in those reports.

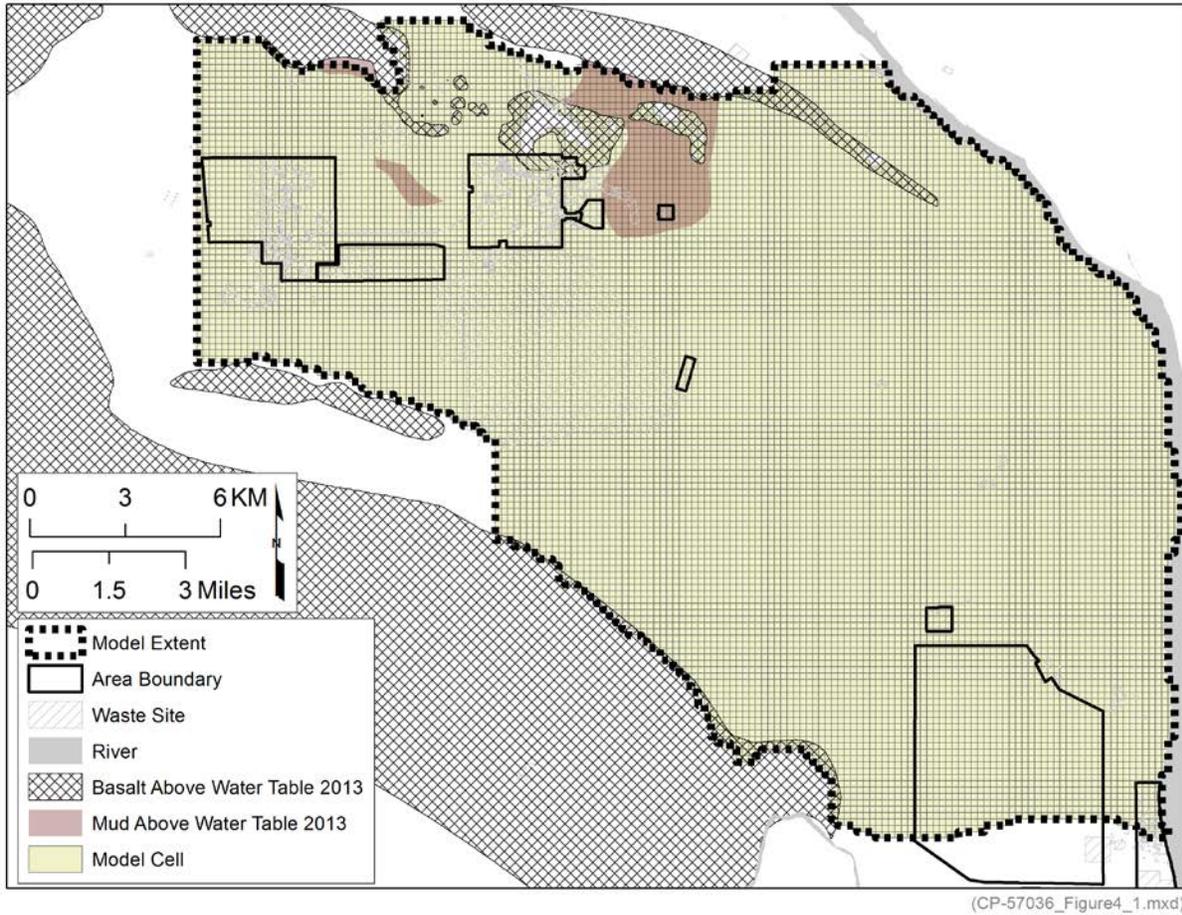


Figure 2-1. P2R Model Extents (Source: CP-57037, Rev. 0)

The scenarios presented in this ECF are based on simulations using the P2RGWM reported in ECF-HANFORD-13-0031. It must be noted that some wells in the 200 West area were not located correctly in those model files. Table 2-1 lists those wells and shows their updated location information.

Table 2-1. P2R Model Well Locations

Well Name	ECF-HANFORD-13-0031 Simulated Locations		Updated Locations	
	Row	Column	Row	Column
IW-3-l	40	19	41	33
IW-2-Cr	41	19	53	30
IW-2-l	41	20	43	33
IW-1-l	43	33	45	33
EW-2-Cr	43	15	48	40

Table 2-1. P2R Model Well Locations

Well Name	ECF-HANFORD-13-0031 Simulated Locations		Updated Locations	
	Row	Column	Row	Column
IW-1-Cr	45	33	49	28
EW-1-Cr	45	15	50	35
EW-1-Tc	45	16	43	15
EW-2-Tc	48	33	45	15
EW-3-Tc	49	40	45	16
EW-2-U	50	28	41	20
EW-1-U	53	35	40	19

References:

ECF-HANFORD-13-0031, 2014, *Fate and Transport Modeling for Baseline Conditions for Remedial Investigation/Feasibility Studies of the 200-BP-5 and 200-PO-1 Groundwater Operable Unit*, Rev. 0, CH2M HILL Plateau Remediation Company, Richland, Washington.

To maintain configuration management and consistency with this ECF, those well locations are not updated in this ECF. These wells are outside the area of interest for the alternatives evaluations presented in this ECF, and the updated locations do not impact the relative performance of these alternatives. It is recognized that future evaluations in support of the 200-BP-5 and 200-PO-1 RD/RA WP will utilize updated models, including updated initial conditions, pumping rates, and well locations.

3 Methodology

Developing a set of simulations to evaluate possible remedial strategies for 200-East was completed in several steps. These include, 1) development of a set of goals to guide the evaluation process; 2) determining the metric used to rank the effectiveness of the scenarios at achieving the remedial goals; 3) completing individual simulations for comparing P&T scenarios; and 4) establishing the remedial evaluation case or the parameters and inputs that will reflect the expected behavior of the plume for comparison to the various P&T scenarios. Each of these steps is discussed in the following sections.

3.1 P&T Scenario Analysis Goals

A set of goals was developed in order to guide the development of the P&T analysis and comparison. These goals were established to ensure that the simulated scenarios provided the information necessary to make a reasonable comparison. These included:

- Simulate at least a 50-year duration to match the total remedy duration identified as part of the FS process.

- Present a range of P&T scenarios that show a progression of aggressiveness toward reaching remedial goals.
- Limit P&T duration to 25 years and vary the number and extraction/injection rate of wells to achieve cleanup within this time frame.

These guidelines were used to develop the individual MODFLOW/MT3D simulations used to compare the effectiveness of P&T scenarios.

3.2 Ranking Metrics

MT3D-MST results provide an estimate of concentration for each computational cell at each time for the entire model domain. In order to assimilate all of this information into a useful narrative it is often useful to develop summary statistics for the entire model and for separate regions of the model. These statistical measures can be used to compare between separate P&T scenarios. They can also be used as metrics for establishing the rank of effectiveness for the P&T scenarios at remediating portions of and/or the entire model. This section describes the methods used to calculate the metrics used to compare the various P&T scenarios.

3.2.1 Model Regions

At times it is useful to evaluate the model as a whole and/or based on sub regions of the model. This provides a method to compare the P&T scenarios effectiveness on the local scale and on the model scale. For the scenario analysis a set of sub regions was developed based on both the plume geometry and the location of infrastructure at 200-East in order to compare simulation results. Figure 3-1 shows the five sub regions developed for evaluating the model results. These include the B Complex, C Farm, Greater 200-East Area (including B Plant), Gable Gap, and Distal Plume sub regions. When summary statistics are calculated for the entire model all computational cells in the model domain are used for the calculation. When the statistics are calculated for the sub region, only those computational cells within the boundary of the sub region are used for the calculation.

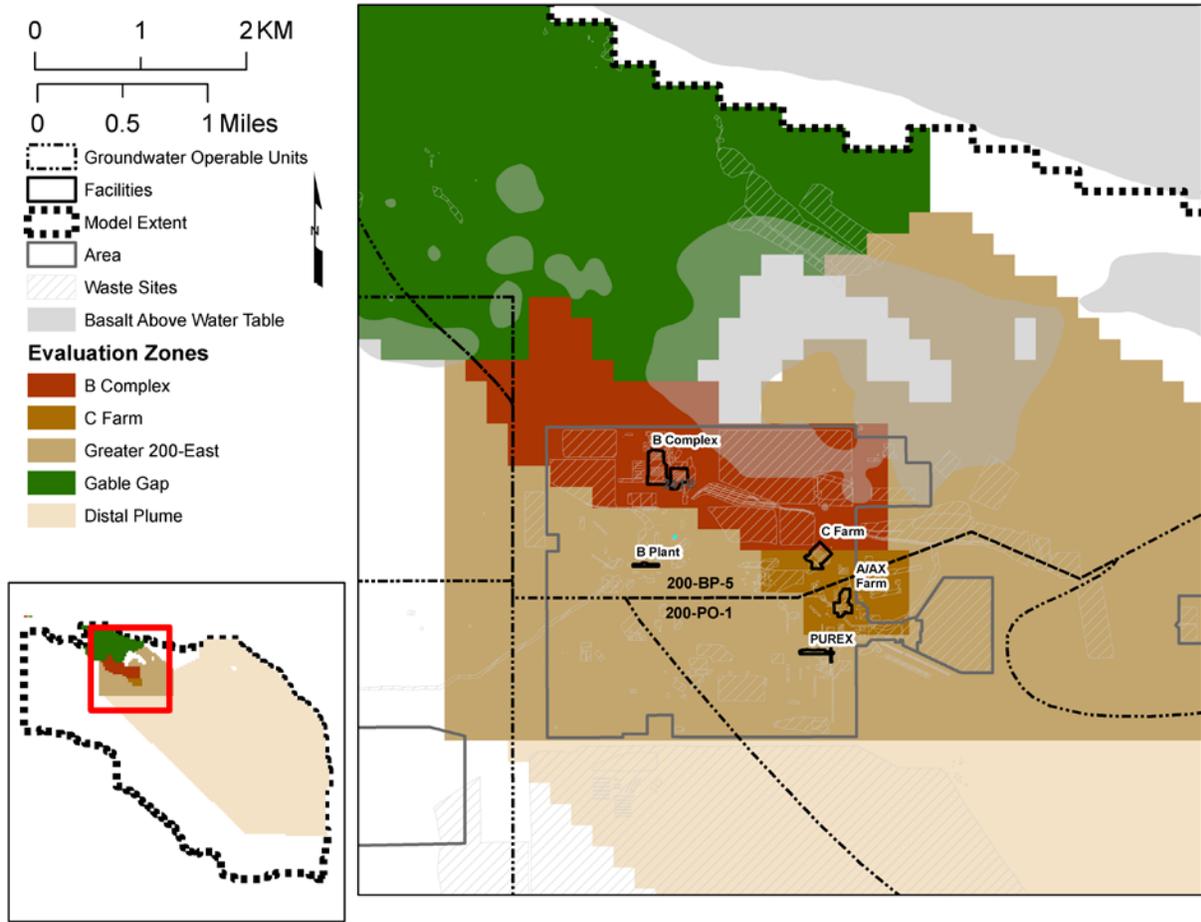


Figure 3-1. Locations of Model Domain Sub Regions used to Evaluate Simulation Results

3.2.2 Summary Statistics

The primary statistics used to analyze the results of F&T modeling for the constituents were the peak, the 90th percentile, the 95 percent upper confidence limit (95% UCL), and the arithmetic mean concentration. For all calculations of summary statistics, when the estimated concentration at any computational cell location falls below half of the cleanup level (i.e., half the drinking water standard [DWS]) the cell was not included in the calculation of the summary statistics. The calculation of each summary statistic is described further in the following sections.

3.2.2.1 Peak

The peak concentration refers to the highest magnitude concentration at any computational cell within its corresponding region.

3.2.2.2 90th Percentile

The 90th percentile calculation is carried out non-parametrically using a Weibull ranking scheme. The values for all cells are tabulated, sorted based on concentration value, and a rank is applied to the sorted data based on Equation 3.1. The concentration whose plotting position has the exact value of 0.9 is selected as the 90th percentile concentration. However, in most cases no concentration will have an exact

rank of 0.9. Therefore, in these cases, the two values with ranks closest to 0.90, above and below, are selected and the 90th percentile concentration is selected by linearly interpolating between these values using the rank as the weighting factor.

$$P = r / (n + 1) \tag{Equation 3.1}$$

where, P = Weibull plotting position
 r = rank of data point
 n = number of samples

3.2.2.3 Mean

The arithmetic mean is calculated by summing the estimated concentration value for each cell within the region and dividing by the number of cells within the region. Only those cells above half the cleanup level are considered a part of the calculation.

3.2.2.4 95% UCL

The 95th percentile upper confidence limit (95% UCL) calculation follows the guidance provided by the EPA (OSWER 9285.6-10) using the following equations:

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i \tag{Equation 3.2}$$

where:

\bar{X} ≡ Sample Mean
 n ≡ The number of samples
 X_i ≡ The ith sample of the sample group

$$s = \sqrt{\frac{1}{n - 1} \sum_{i=1}^n (X_i - \bar{X})^2} \tag{Equation 3.3}$$

where:

s ≡ Sample Standard Deviation
 \bar{X} ≡ Sample Mean
 n ≡ The number of samples
 X_i ≡ The ith sample of the sample group

$$UCL_{1-\alpha} = \bar{X} + \frac{t_{\alpha, n-1} * s}{\sqrt{n}} \quad \text{Equation 3.4}$$

where:

UCL	≡	Upper Confidence Limit
s	≡	Sample Standard Deviation
\bar{X}	≡	Sample Mean
n	≡	The number of samples
t	≡	Student's t value

All sample data above half of the DWS are used to calculate the 95% UCL metric. One deviation made in this calculation from the standard 95% UCL calculation is that the threshold sample size is two instead of eight. The reason for allowing the 95% UCL to be calculated with fewer than eight samples is given the number of available grid cells per waste management area. Due to the coarseness of the model grid sample counts rapidly drop below the eight-sample threshold.

The first steps for the 95% UCL calculation are to obtain the simple arithmetic mean (Equation 3.2) and sample standard deviation (Equation 3.3). Combining the use of the sample mean and standard deviation the 95% UCL estimate was calculated using Equation 3.4. The exceptions to this calculation process are when the sample count has only one sample or the calculated 95% UCL is greater than the recorded peak concentration, in which case the peak concentration value is reported as the 95% UCL.

3.3 Developing Individual Simulations

Individual simulations were developed based on the guidelines above and through an iterative process of running simulations, reviewing the results, and developing new P&T scenarios based on the analysis goals and the information obtained from the previous simulations. A total of 4 P&T scenarios were developed as part of the analysis in addition to a no-action scenario (5 modeling scenarios). These simulations are summarized in Table 3-1. The steps used in developing these simulations included the following steps:

- Identifying the location and rates of wells
- Modifying the model inputs and executing the simulation
- Post processing and evaluating the results

Each of these steps is discussed in the following sections.

Although five modeling scenarios are shown in Table 3-1, only three were carried forward to the FS: Scenario 1 (No-Action Alternative in the FS), Scenario 5 (Alternative 2 in the FS), and Scenario 4 (Alternative 3 in the FS). Although scenarios 2 and 3 were not carried forward to the FS, these scenarios are useful for the contextual information they provide regarding the impact of different well configurations on regional groundwater flow and cleanup times.

3.3.1 Identify Well Location and Rate

The locations of all wells used at some point in the scenario analysis are shown in Figure 3-2. These locations were selected based on previously constructed extraction wells (299-E33-360 and 299-E33-361) and on areas where plume concentrations were of the greatest magnitude. The extraction/injection rates ranged from a total of 250/0 gallons per minute (gpm) to 400/100 gpm in the simulations. These were also adjusted in an iterative manner based on the simulation results. Table 3-1 illustrates how changes progressed through the iterative process. Modeling scenarios 1, 5 and 4 as shown in Table 3-1 were carried forward into the FS as alternatives 1 through 3, respectively. All wells were simulated as fully penetrating wells except for wells targeting the B Plant plume. These wells were simulated in order to focus remediation within the deeper portions of the unconfined aquifer.

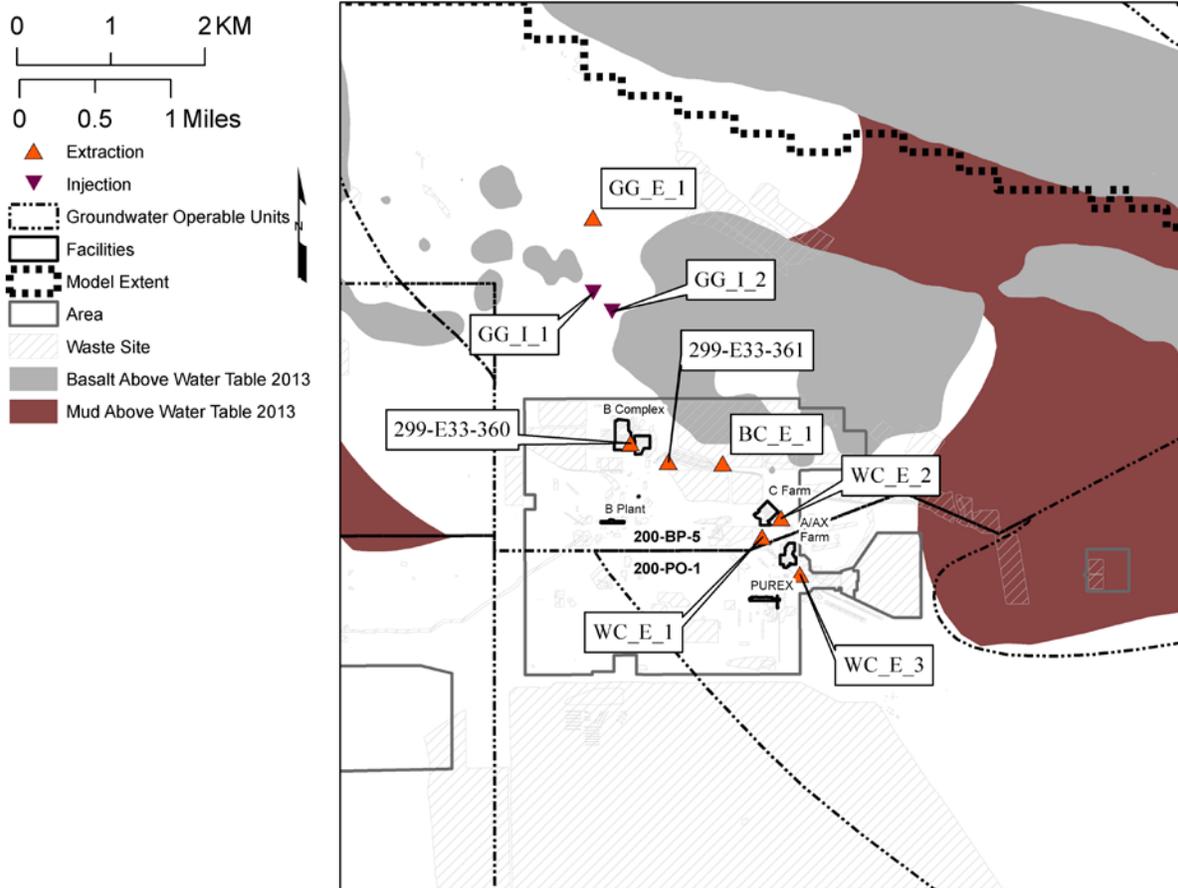


Figure 3-2. Location of Wells used as Part of the Scenario Analysis in Support of the 200-East FS

3.3.2 Modify Simulation Inputs and Executing Simulations

The MODFLOW discretization and the multi-node well (MNW2) package for the P2R Model were altered as part of the simulations involved in the P&T scenario analysis. The discretization package was altered to reflect a shortened time frame of evaluation. All simulations were carried out for a 50-year period. The MNW2 package was altered for each simulation to reflect the extraction/injection rates, duration, and locations listed in Table 3-1. The WEL package was unaltered from the P2R Model.

The MODFLOW and MT3DMS software programs were used to simulate groundwater flow and contaminant transport, respectively. MODFLOW solves the groundwater flow equation to calculate hydraulic heads. MT3DMS uses the flow solution provided by MODFLOW, along with transport properties of the aquifer and contaminants, to solve the groundwater advection-dispersion equation, yielding concentrations in time and space. These resultant concentration estimates were used to evaluate the future conditions of plumes based on the simulated P&T scenarios.

3.3.3 Post Processing Results

After completion of the MODFLOW/MT3D simulations the estimated concentrations were post-processed to provide summary statistics tables and charts and plume concentration contour maps for the 200-East area. These products were utilized to compare results between P&T scenarios and make adjustments for subsequent scenario simulations. Post processing was completed using several applications designated as support software for the MODFLOW/MT3D. These include PEST, ArcGIS®¹, Tecplot®² and R software package were used to process these results. PEST utilities were used to provide the summary statistic estimates presented in 3.2.2, Tecplot and ArcGIS were used to prepare the plume concentration contour maps, and the R software package was used to tabulate the time to cleanup and create chart summary statistics over time.

3.4 Remedial Evaluation Case

The remedial evaluation case (No-Action Alternative, Scenario 1) provides a baseline set of simulation results that can be used to compare subsequent simulations in order to assess P&T effectiveness. Key features of the remedial evaluation case for the 200-East FS include:

- Initial concentration distribution of contaminant concentration based on the averaging concentrations from the annual report plumes within the boundary of each computational cell.
- No continuing source is considered for any contaminant plumes.
- Discharge from TEDF is assumed to occur.

While this case provides a baseline for assessing the effectiveness of the P&T scenarios, the value of simulating other conditions than those listed above provides an assessment of the uncertainty in the numerical model. Therefore, other conditions than those provided above were simulated to address the uncertainty that exists in the assumptions used to rank the P&T scenarios. The model inputs affecting the remedial evaluation case are discussed in detail in Section 4 of this ECF.

¹ ArcGIS is a registered trademark of ESRI, Redlands, California.

² Tecplot is a registered trademark of Tecplot Inc.

Table 3-1. Location and Rates of Injection and Extraction Wells for all Simulation Sets Developed for the Evaluation Scenarios to Support the 200-East FS

Well Name	X	Y	Scenario / (FS Alternative)				
			1 / (Alt. 1)	2	3	4 / (Alt. 3)	5 / (Alt. 2)
C8923 (299-E33-360)	573772.1	137386.9	0	-75	-75	-50	-50
C8924 (299-E33-361)	574069.3	137122.3	0	-75	-75	-75	-75
BC_E_1	574700	137100	0	0	0	-75	-75
WC_E_1	575100	136300	0	-33.3	-33.3	-33.3	-33.3
WC_E_2	575300	136500	0	-33.3	-33.3	-33.3	-33.3
WC_E_3	575500	135900	0	-33.3	-33.3	-33.3	-33.3
GG_E_1	573300	139700	0	0	-100	-100	0
GG_I_1	573300	138900	0	0	50	50	0
GG_I_2	573500	138700	0	0	50	50	0
B Complex	Total EXT		0	-150	-150	-200	-200
	Total INJ		0	0	0	0	0
WMA C	Total EXT		0	-100	-100	-100	-100
	Total INJ		0	0	0	0	0
Gable Gap	Total EXT		0	0	-100	-100	0
	Total INJ		0	0	100	100	0
Total Extraction			0	-250	-350	-400	-300
Total Injection			0	0	100	100	0

4 Assumptions and Inputs

All model properties, initial conditions and boundary conditions are drawn from the P2R Model. A full description of the P2R Model is provided in CP-57037 and its application to simulate contaminant F&T for the scenarios is detailed in ECF-HANFORD-13-0031. The modeling effort described in ECF-HANFORD-13-0031 is the baseline modeling performed for the BP-5/PO-1 Remedial Investigation/Feasibility Study (RI/FS). The inputs and assumptions presented in the previous reports documenting the P2R Model are inherited using the model for this application. Only those assumptions and inputs unique to this application of the P2R Model will be presented in this ECF. In this section the development of the extraction well network, the initial contaminant plumes, and the continuing source terms used in the modeling will be discussed.

4.1 Extraction and Injection Wells

The extraction and injection wells associated with the P&T systems evaluated are modeled using the Multi-Node Well Package (MNW2) available as part of MODFLOW. The locations of all wells evaluated as part of the analysis are shown in Figure 3-2. P&T remediation schemes have been developed at the Hanford Site to aid in the cleanup effort. The process of selecting well locations was discussed in Section 3.

As part of the RI simulation development, documented in ECF-HANFORD-13-0031, several features of the predicted F&T of the contaminant plumes were documented that affected the placement of the extraction/injection wells. These included the development of stagnation zones where contamination remained present for a longer than expected duration based on the behavior of the adjacent plume. Figure 4-1 shows the nitrate concentration at simulation times 0, 20, and 50 years. While much of the plume disperses from 0 to 20 years, near Gable Mountain Pond and B plant portions of the plume remain until past the 50 years.

The locations in the model where the plumes persist correspond to the locations of low transmissivity within the aquifer. Figure 4-2 shows the transmissivity map developed based on the calibrated groundwater flow model. Each of the locations showing persistent contamination past 50 years is associated with a location within the model domain that is estimated to have a relatively lower transmissivity than the surrounding aquifer. Placement of the extraction/injection wells was conducted with consideration for the total transmissivity of the aquifer in order to minimize the stagnation zones that appeared within the simulated model domain. In some cases, placement of extraction wells decreased transmissivity causing stagnation in locations where it had not previously occurred. Also, in some instances injection wells were placed in locations to increase the transmissivity in order to promote movement out of stagnation zones toward extraction wells. Developing the final set of scenarios was based on an iterative process of executing simulations and interpreting simulation results.

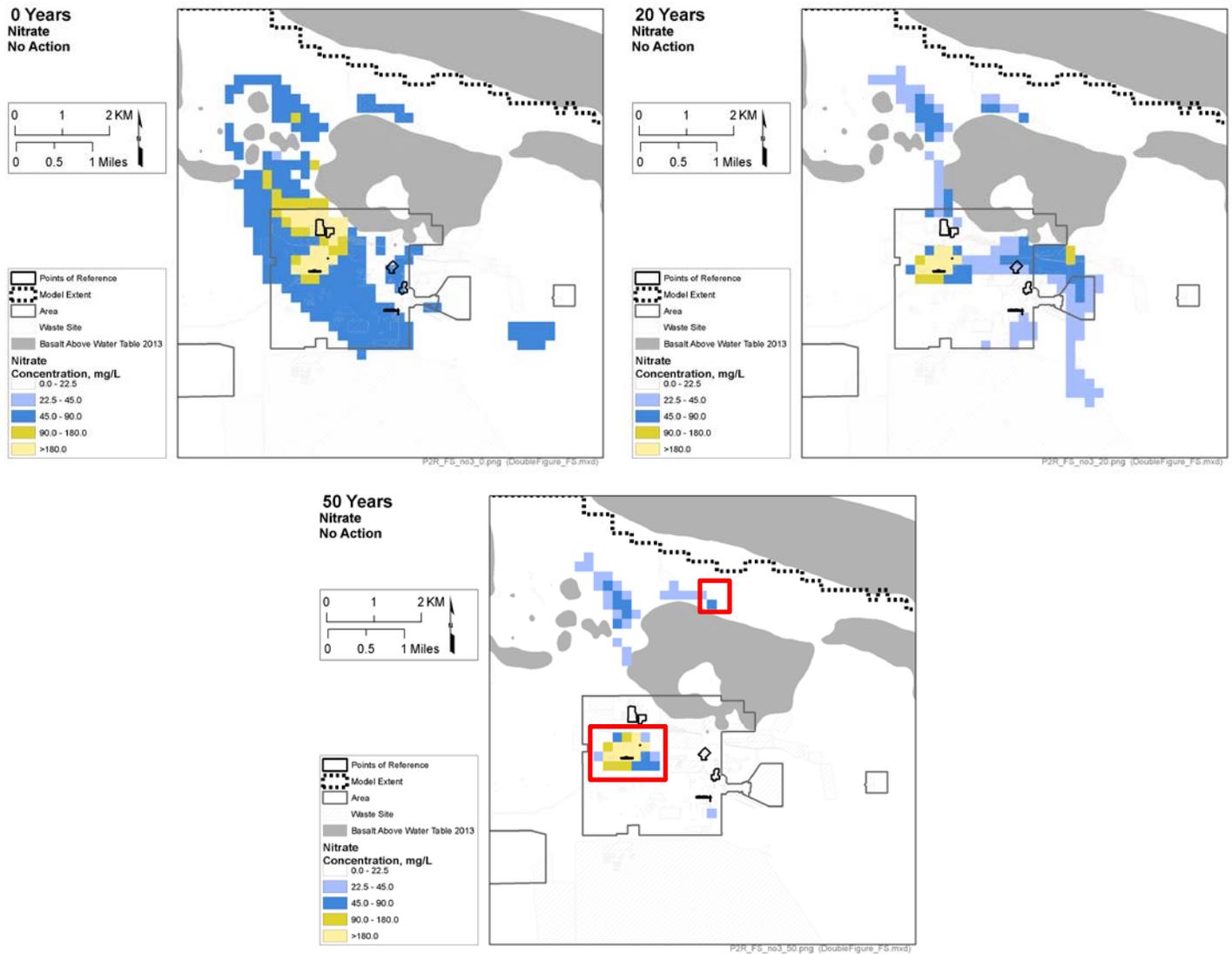


Figure 4-1. Simulated Nitrate Concentration over Time Illustrating the Tendency of Contamination to Stagnate in Low Transmissivity Areas of the Model (highlighted in red; Source: ECF-HANFORD-13-0031)

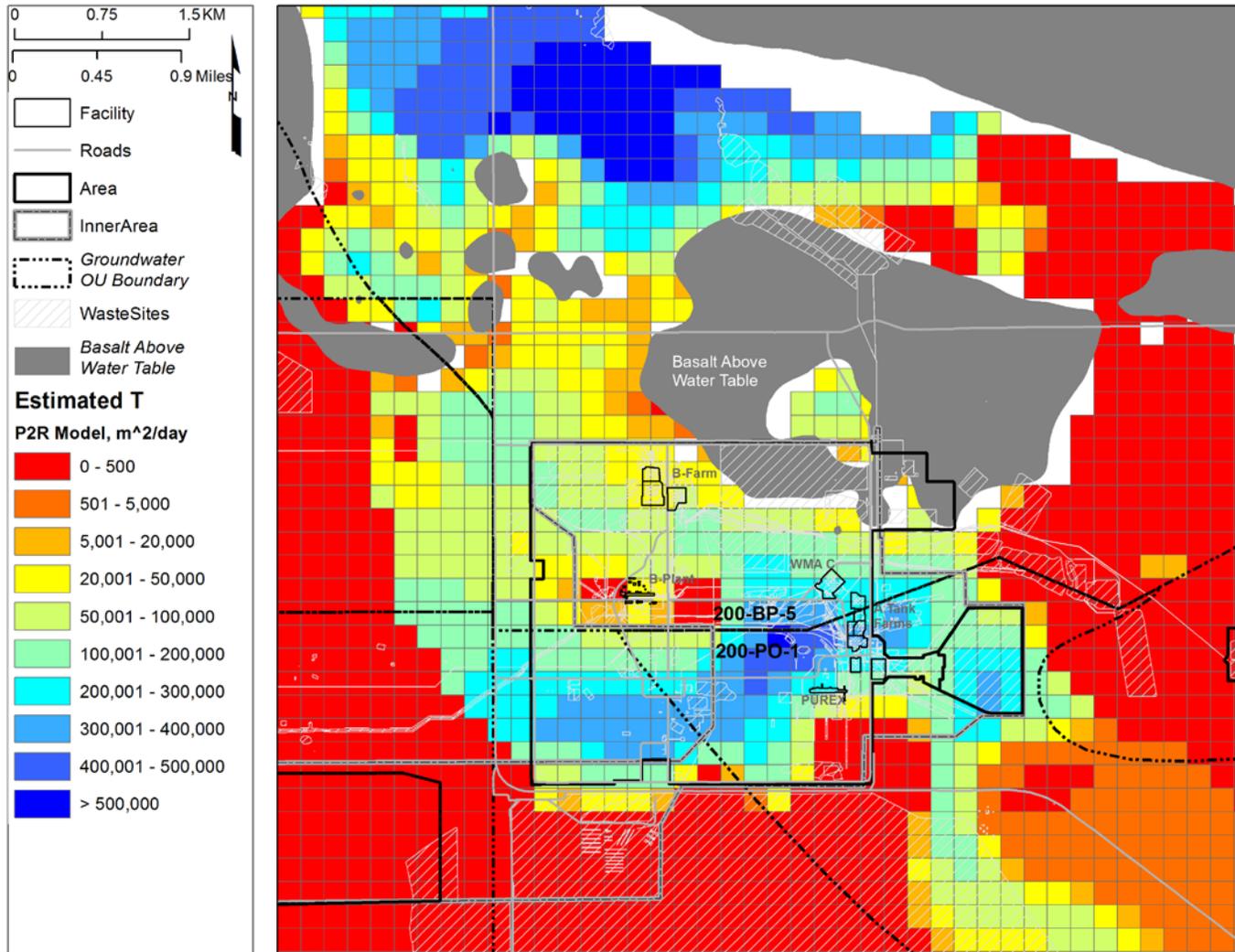


Figure 4-2. Estimated Transmissivity Map for 200-East based on the Simulated Transmissivity Field in the P2R Model

4.2 Initial Conditions

The initial conditions required for this calculation are initial contaminant concentrations.

4.2.1 Contaminant Concentration

The initial groundwater contaminant distributions of the eight constituents identified in Section 1 were based on ECF-HANFORD-13-0030, *Initial Groundwater Plume Development to Support Fate and Transport Modeling for Remedial Investigation/Feasibility Studies of the 200-BP-5 and 200-PO-1 Groundwater Operable Units*. The approach documented there is summarized in the following sections.

Contaminant plumes were created to represent average initial conditions. The original estimate (presented in DOE/RL-2014-32, *Hanford Site Groundwater Monitoring Report for 2013*, was produced using a 10 m × 10 m raster estimate of concentrations in the unconfined aquifer. The initial estimate was upscaled to the P2R Model grid based on the arithmetic average concentration within each 200 m × 200 m cell for the average initial concentration conditions.

Based on information presented in ECF-HANFORD-13-0037, *Development of Source Terms for Inclusion in Fate and Transport Modeling for Remedial Investigation/Feasibility Studies of the 200-BP-5 and 200-PO-1 Groundwater Operable Units*, two areas have been identified within the 200 East Area where continuing sources of contaminant release from the vadose zone into the 200-BP-5 OU are likely to persist over the foreseeable future: WMA C (C Tank Farm area) and the B Complex (B-BX-BY Tank Farms and BY cribs area). Note that the vadose zone sources described in this section are not associated with TEDF nor are they part of the 200-BP-5 OU. The primary contaminants of concern that are likely to provide continuing sources from the vadose zone are technetium-99, uranium, and nitrate. The recommended mass and activity from the ECF-HANFORD-13-0037 are presented in Table 4-1. These values were included in the continuing source simulations using the source/sink mixing package of MT3DMS.

Table 4-1. Vadose Zone Constituent Continuing Sources

Area	Contaminant	Units	Rate	Duration (years)
WMAC	Technetium-99	Ci/yr	0.1	60
BYCRIB	Technetium-99	Ci/yr	0.22	90
BYCRIB	Nitrate	kg/yr	8,212.5	90
BBXB7	Technetium-99	Ci/yr	0.008	300
BBXB7	Uranium	kg/yr	3.8	300

Source: ECF-HANFORD-13-0037, *Development of Source Terms for Inclusion in Fate and Transport Modeling for Remedial Investigation/Feasibility Studies of the 200-BP-5 and 200-PO-1 Groundwater Operable Units*.

5 Software Applications

MODFLOW-2000-MST, MT3D-MST, Excel®, PEST, ArcGIS®³, and Groundwater Vistas™⁴ software programs were used for this calculation. These are CH2M HILL Plateau Remediation Company (CHPRC) approved software, managed and used in compliance with the requirements of controlled software management procedure that implements the requirements of DOE O 414.1d, *Quality Assurance*. MODFLOW-2000-MST and MT3D-MST are approved calculation software and Excel®, PEST, ArcGIS, and Groundwater Vistas are approved support software (CHPRC-00258).

MODFLOW-2000-MST, MT3D-MST, and PEST were executed on the Tellus Linux®⁵ Cluster. The details regarding the cluster are presented below. A copy of the *Software Installation and Checkout Form* for the MODFLOW-2000 and MT3D-MST installation used for this calculation is provided in Attachment A to this ECF.

The Tellus Linux cluster is owned by CHPRC and operated by Mission Support Alliance. The Tellus cluster consists of 16 Dell® PowerEdge® M610 blade servers. Each with 2x Intel® Xeon® X5670 CPU's (6 cores/CPU, 2.93 GHz), 96GB of RAM, and 10Gbps Ethernet cards. The management node is a Dell® PowerEdge® M710 blade server with 2x Intel® Xeon® X5550 CPU's (4 cores/CPU, 2.7 GHz, 96 GB of RAM. As given by the command “uname -a”, the operating system details are:

```
Linux tellusgmt.rl.gov 2.6.18-308.4.1.el5 #1 SMP Tue Apr 17
17:08:00 EDT 2012 x86_64 x86_64 x86_64 GNU/Linux
```

5.1 Exempt Software

Microsoft Excel®⁶ is site-licensed software used as “flat file” spreadsheets that are wholly incorporated into this calculation and verified during the technical review of this report and is therefore rated as exempt software. Excel® spreadsheets were used to tabulate average monthly and long-term hydraulic head and river stage data for model input, and chart modeling results produced by MODFLOW-2000 and MT3DMS-MST.

5.2 Approved Software

MODFLOW-2000-MST and MT3D-MST are approved calculation software (CHPRC-00258, *MODFLOW and Related Codes Software Management Plan*). PEST, ArcGIS, TecPlot, and Groundwater Vistas are approved support software (CHPRC-00258).

5.2.1 MODFLOW-2000-MST

- Software Title: MODFLOW-2000-MST

³ ArcGIS® is a registered trademark, or service mark, of ESRI in the United States, the European Community, or certain other jurisdictions.

⁴ Groundwater Vistas™ is a trademark of Environmental Simulations, Inc.

⁵ Linux is a registered trademark of Linus Torvalds.

⁶ Excel is a registered trademark of Microsoft Corporation in the United States and other countries.

- Software Version: CHPRC Build 6 (executable “mf2k-mst-chprc06dp.x”), double precision compilation
- Hanford Information System Inventory (HISI) Identification Number: 2517 (Safety Software, Level C)
- Authorized Workstation type and property number: Linux® Cluster, HLAN Property Tag (Front End Node) WD56054
- Authorized User: J. Fullerton
- Software Vendor Documents:
 - Harbaugh et al. (2000), *MODFLOW-2000, the U.S. Geological Survey modular ground-water model -- User guide to modularization concepts and the Ground-Water Flow Process*
 - SSPA (2012a), *Documentation for: MODFLOW-2000-SSPA Build 006 Modifications and options added to MODFLOW-2000*
- CHPRC Software Control Documents:
 - CHPRC-00257, *MODFLOW and Related Codes Functional Requirements Document*
 - CHPRC-00258, *MODFLOW and Related Codes Software Management Plan*
 - CHPRC-00259, *MODFLOW and Related Codes Software Test Plan*
 - CHPRC-00260, *MODFLOW and Related Codes Requirements Traceability Matrix*
 - CHPRC-00261, *MODFLOW and Related Codes Acceptance Test Report*

5.2.2 MT3DMS-MST

- Software Title: MT3DMS-MST
- Software Version: CHPRC Build 6 (executable name “mt3d-mst-chprc06dp.x”), double precision compilation
- HISI Identification Number: 2518 [Support Software; CHPRC-00258]
- Authorized Workstation type and property number: Linux® Cluster, HLAN Property Tag (Front End Node) WD56054
- Authorized User: J. Fullerton
- Software Vendor Documents:
 - Zheng and Wang (1999), *MT3DMS, A Modular Three-Dimensional Multi-Species Transport Model for Simulation of Advection, Dispersion and Chemical Reactions Of Contaminants in Groundwater Systems; Documentation and User's Guide*

- SSPA (2012b), *Documentation for: MT3DMS-SSPA Build 006 Modifications and options added to MT3DMS*
- CHPRC Software Control Documents:
 - CHPRC-00257, *MODFLOW and Related Codes Functional Requirements Document*
 - CHPRC-00258, *MODFLOW and Related Codes Software Management Plan*
 - CHPRC-00259, *MODFLOW and Related Codes Software Test Plan*
 - CHPRC-00260, *MODFLOW and Related Codes Requirements Traceability Matrix*
 - CHPRC-00261, *MODFLOW and Related Codes Acceptance Test Report*

5.2.3 MODFLOW & Related Codes Support Software

CHPRC-00257 distinguishes calculational software from supporting software because these two groups of software are classified and graded differently. The basis for the difference is that calculational software, including MODFLOW-2000-MST and MT3DMS-MST, calculate results that will be used to support decision-making and as such, constitute safety software graded to level C. In contrast, supporting software includes graphical interfaces, visualization, and input preparation support but not calculation of results that directly support decision-making, and are therefore not rated as safety software. The support software items identified in CHPRC-00258 and used in this calculation were:

- **Groundwater Vistas®:** (*Guide to Using Groundwater Vistas* [Rumbaugh and Rumbaugh, 2007].) Used graphical tools for model input/output review. Groundwater Vistas™ was used in pre-processing some input files.
- **PEST:** (*PEST Model-Independent Parameter Estimation User Manual Part I: PEST, SENSAN and Global Optimisers, 6th Edition* [Watermark Numerical Computing, 2016].) Used pest utilities for changing formats of inputs and output files for ease of manipulation in creating figures for the report.
- **ArcGIS®:** Used graphical tools for model input/output review. ArcGIS was used in pre-processing some input files and creating output graphics for the report.
- **TecPlot:** Used to create graphics of the simulated output from MODFLOW-MST and MT3D-MST in order to develop figures for the report.

5.3 Software Installation and Checkout

Safety Software (MODFLOW-2000-MST and MT3DMS-MST) was checked out and installed in accordance with procedures specified in CHPRC-00259. Executable files were obtained from the Software Owner, installation tests identified in CHPRC-00259 were performed and confirmed, and Software Installation and Checkout Forms were completed and approved for installations used to perform model runs reported in this calculation. A copy of the Software Installation and Checkout Forms for the authorized users and authorized workstations for software used that requires this documentation are provided in Attachment A to this ECF.

5.4 Statement of Valid Software Application

The preparers of this calculation attest that the software identified above, and used for the calculations described in this calculation, is appropriate for the application and used within the range of intended uses for which it was tested and accepted by CHPRC. Because MODFLOW-2000-MST and MT3DMS-MST are graded as Level C software, use of this software is logged in the HISI under the corresponding entries (Identification Numbers 2517 and 2518). These software items were used within the limitations identified in CHPRC-00257. Installations of the software are operating correctly, as demonstrated by installation testing performed on the Tellus Subsurface Modeling Platform and documented in the Software Installation and Checkout Form (Attachment A).

6 Calculation

Following the methodology detailed in Section 3, 5 sets of simulations were conducted to support the FS of the 200 East. Each set of simulations included simulations for each of the eight constituents for the average initial condition, and simulations with continuing source terms for nitrate, technetium-99, and uranium. Thus, one set of simulations included 11 individual MT3D simulations. Simulations are assumed to start at the commencement of the P&T remediation. All scenarios were completed for a simulated duration of 50 years. The results of these simulations are discussed in Section 7.

6.1 Assessing Plume Migration for Existing Plumes

The simulation outputs from each of the simulations mentioned previously were processed to create a set of figures to illustrate the F&T of the simulated contaminants. The figures created include plan view contour maps at simulation time of 0, 1, 2, 5, 10, 15, 20, 25, 30, and 50 years and summary charts for the mean, 90th percentile, 95% UCL, and maximum concentration for full domain of the model. An example of the figures shows results for the technetium-99 simulation for average concentration initial conditions in Figure 6-1 and Figure 6-2. The following sections describe the information that can be obtained from these figures. The figures for the selected simulation sets conducted for this ECF are included in Attachment B.

6.1.1 Plan View Contours

Figure 6-1 shows plan view contour plots for the technetium-99 plume after 20 years of simulation. Several aspects of the figure help identify the simulations. There is a title in the upper left-hand corner that describes the scenario simulated and the time of year. In this case the simulation time is at 20 years. The title indicates that this simulation was for average initial concentration conditions, where no remediation action is considered for either BP-5 or PO-1 (e.g., No Action). The color ramp for the contours is designed that the first colored contour interval (light blue) represents concentrations between 0.5 and 1.0 times the cleanup level of 900 pCi/L for technetium-99 and the second interval (darker blue) represents concentrations above the cleanup level. The concentrations shown are the maximum for any given location regardless of depth.

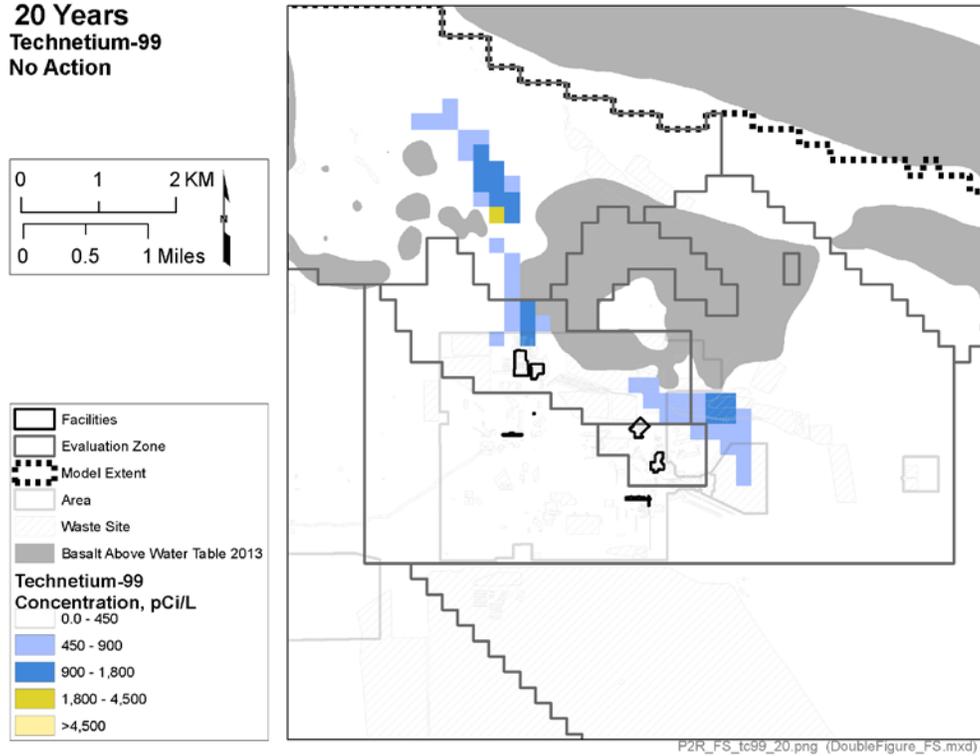


Figure 6-1. Plan View Contours of the Technetium-99 Plume at Simulation Time 20 Years

6.1.2 Statistical Summary Chart

The chart shown in Figure 6-2 provides a statistical summary of the plume migration over the domain of the model. The chart indicates the contaminant concentration on the ordinate axis and simulation time in years on the abscissa. Figure 6-2 shows the mean, 90th percentile, peak concentration within the boundaries of the modeling area, the 95% UCL, and also shows the total area whose concentration exceeds the drinking water standard. The mean value represents an arithmetic mean concentration for all cells within the specified subregion or the entire model domain. The 90th percentile is estimated by tabulating all estimated concentration values, sorting the values, assigning a Weibull plotting position to determine rank, and selecting the concentration value corresponding to the 90th percentile value. The peak concentration is the concentration with the highest magnitude from any estimated concentration. Using the sample mean and deviation the 95% UCL is calculated based on Student's *t* distribution as shown in Equation 3.4.

In figures simulating a departure from the remedial evaluation case (or No-Action alternative), the simulated results for the remedial evaluation case is shown in faint grey behind in order to provide a comparison to the no-action scenario.

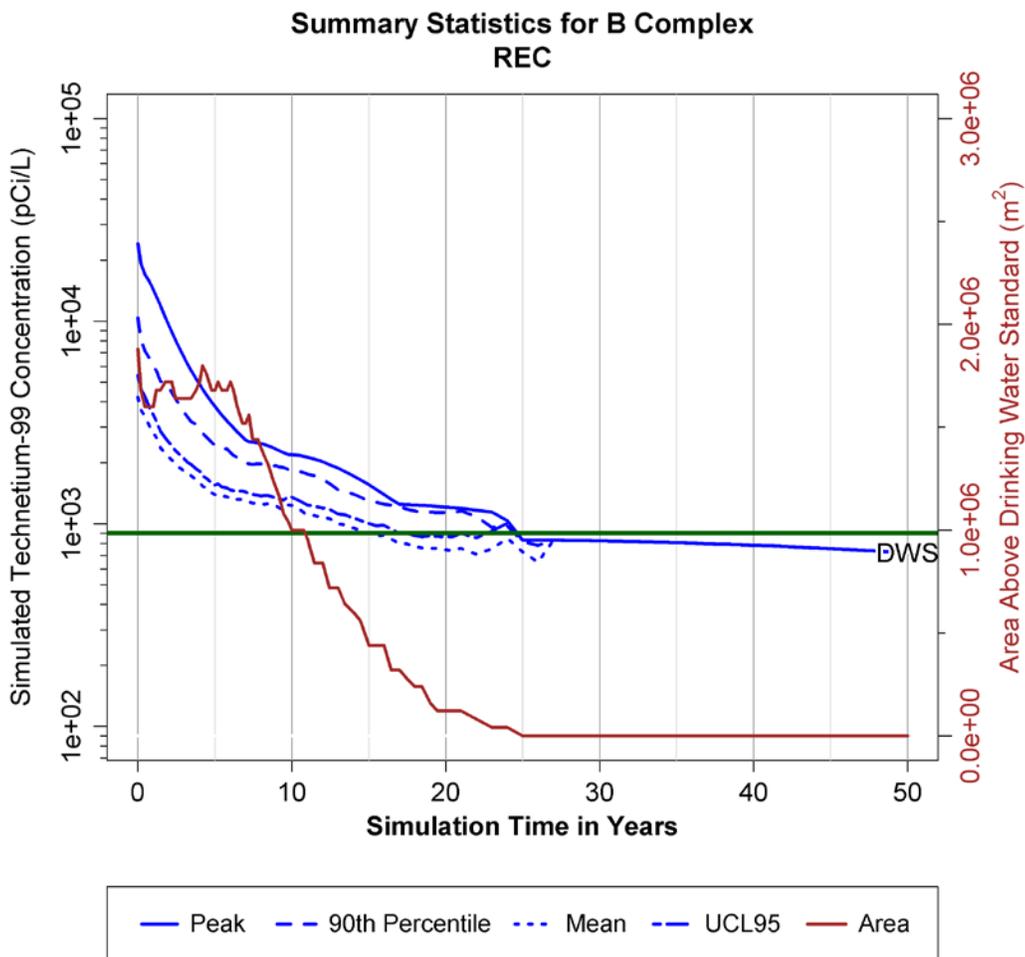


Figure 6-2. Statistical Summary of Simulated Concentration within B Complex for the Technetium-99 Plume

7 Results

Five sets of simulations were conducted as part of the scenario analysis. The total number of F&T simulations for these simulation sets is 5; 4 P&T scenarios and 1 no-action case. Plume maps and statistics plots are provided for technetium-99 and uranium. Summary plots indicating the simulated mass and concentration extracted from the aquifer are provided for all simulated constituents. The simulated concentration represents the fully mixed concentration from all wells in the system. The simulated extracted mass represents the expected cumulative mass extracted for the P&T scenarios. Results from these simulations are documented in the figures and charts discussed in Attachment B.

Table 7-1 through Table 7-5 were developed to provide a summary of the relative differences in time to clean up in years (reporting the closest full year using standard rounding rules) for the various scenarios executed as part of this ECF. Table 7-1 through Table 7-5 show the time to cleanup based on the peak or maximum, the 90th percentile, and 95% UCL concentration within their respective domains for the selected scenarios for the average concentration conditions without continuing sources. The domains for Table 7-1 through Table 7-5 are as follows: maximum times to cleanup for Full Model, B Complex Area,

C Farm or Waste Management Area C, the Greater 200 East Area (including B Plant), and Gable Gap Area, respectively. These time to cleanup numbers were used to develop the FS for 200-BP-5 and 200-PO-1.

Table 7-1. Maximum Times (in years) for the Simulated Concentrations to Fall and Remain below the Cleanup Level for the Full Model

Scenario	Total Rate (GPM)	Technetium-99			Uranium		
		95% UCL	90 th Percentile	Peak	95% UCL	90 th Percentile	Peak
1	0/0	50*	50*	50*	50*	50*	50*
2	-250/0	50*	50*	50*	31	31	39
3	-350/100	22	21	22	29	32	43
4	-400/100	10	17	19	22	35	46
5	-300/0	50*	50*	50*	28	29	43

Notes:

- a. An asterisk indicates cleanup times exceed the modeling duration (i.e. cleanup time greater than 50 years is denoted as "50*")

Table 7-2. Time (in years) for the Simulated Concentrations to Fall and Remain below the Cleanup Level for the B Complex Area

Scenario	Total Rate (GPM)	Technetium-99			Uranium		
		95% UCL	90 th Percentile	Peak	95% UCL	90 th Percentile	Peak
1	0/0	17	25	25	50*	50*	50*
2	-150/0	23	23	24	31	31	31
3	-150/0	22	21	22	29	30	31
4	-200/0	5	6	6	22	23	23
5	-200/0	7	7	7	28	28	29

Notes:

- a. An asterisk indicates cleanup times exceed the modeling duration (i.e. cleanup time greater than 50 years is denoted as "50*")

Table 7-3. Time (in years) for the Simulated Concentrations to Fall and Remain below the Cleanup Level for the Waste Management Area C

Scenario	Total Rate (GPM)	Technetium-99			Uranium		
		95% UCL	90 th Percentile	Peak	95% UCL	90 th Percentile	Peak
1	0/0	5	5	5	0	0	0
2	-100/0	5	5	5	0	0	0
3	-100/0	4	4	5	0	0	0
4	-100/0	5	5	5	0	0	0
5	-100/0	5	5	5	0	0	0

Notes:

- a. An asterisk indicates cleanup times exceed the modeling duration (i.e. cleanup time greater than 50 years is denoted as "50*")

Table 7-4. Time (in years) for the Simulated Concentrations to Fall and Remain Below the Cleanup Level for the Greater 200 East Area (including B Plant Area)

Scenario	Total Rate (GPM)	Technetium-99			Uranium		
		95% UCL	90 th Percentile	Peak	95% UCL	90 th Percentile	Peak
1	0/0	3	22	26	19	50*	50*
2	0/0	1	1	1	20	28	39
3	0/0	1	1	1	22	32	43
4	0/0	1	1	1	22	35	46
5	0/0	1	1	1	21	29	43

Notes:

- a. An asterisk indicates cleanup times exceed the modeling duration (i.e. cleanup time greater than 50 years is denoted as "50*")

Table 7-5. Time (in years) for the Simulated Concentrations to Fall and Remain below the Cleanup Level for the Gable Gap Area

Scenario	Total Rate (GPM)	Technetium-99			Uranium		
		95% UCL	90 th Percentile	Peak	95% UCL	90 th Percentile	Peak
1	0/0	50*	50*	50*	0	0	25
2	0/0	50*	50*	50*	0	0	0
3	-100/100	10	14	19	0	0	0
4	-100/100	10	17	19	0	0	0
5	0/0	50*	50*	50*	0	0	0

Notes:

- a. An asterisk indicates cleanup times exceed the modeling duration (i.e. cleanup time greater than 50 years is denoted as "50*")

8 References

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Attachment A

Software and Installation Checkout Form

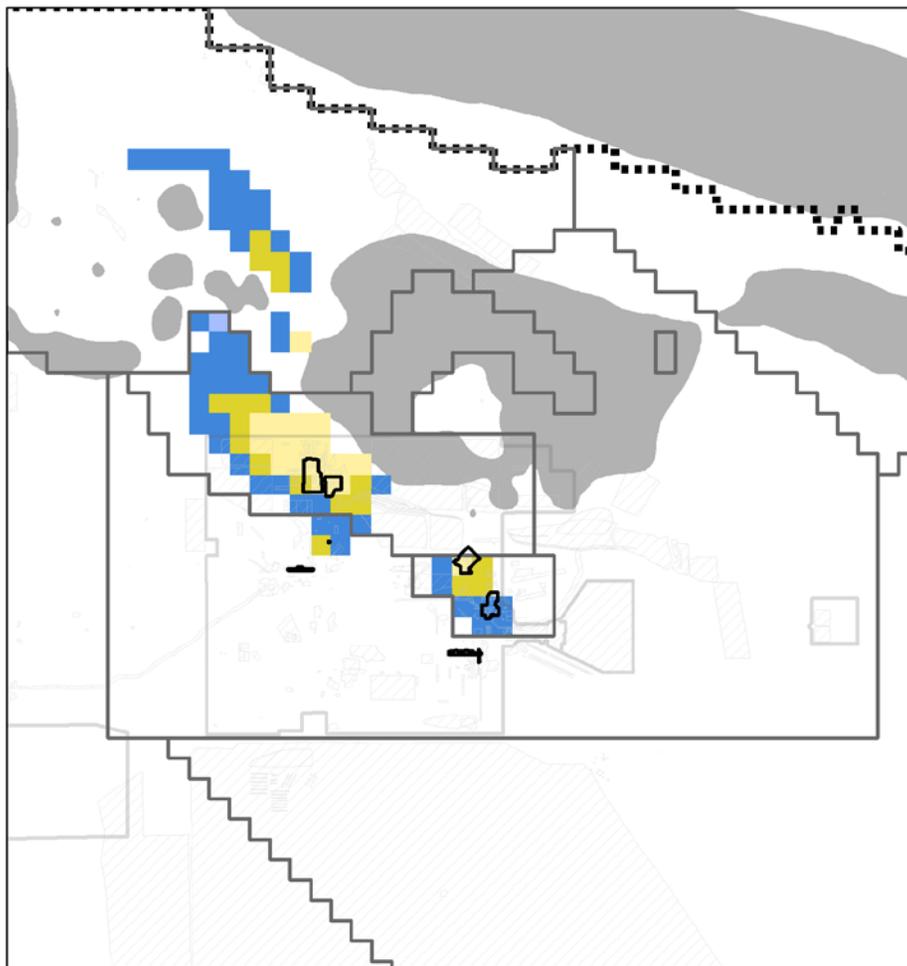
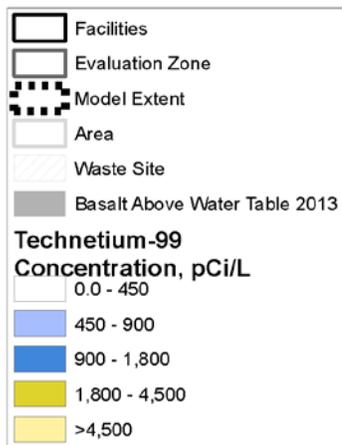
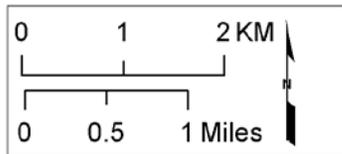
CHPRC SOFTWARE INSTALLATION AND CHECKOUT FORM																			
<p>Software Owner Instructions: Complete Fields 1-13, then run test cases in Field 14. Compare test case results listed in Field 15 to corresponding Test Report outputs. If results are the same, sign and date Field 19. If not, resolve differences and repeat above steps.</p> <p>Software Subject Matter Expert Instructions: Assign test personnel. Approve the installation of the code by signing and dating Field 21, then maintain form as part of the software support documentation.</p>																			
<p>GENERAL INFORMATION:</p> <p>1. Software Name: <u>MODFLOW & Related Codes</u> Software Version No.: <u>Bld 6</u></p>																			
<p>EXECUTABLE INFORMATION:</p> <p>2. Executable Name (include path):</p> <p style="margin-left: 20px;">MD5 sums of executable files tested:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%; font-family: monospace;">c2d687beee9d58dc615995ce8220d9ea</td> <td style="width: 40%; background-color: #cccccc;">[REDACTED]</td> <td style="width: 20%; font-family: monospace;">:/bin/mf2k-chprc06sp.x</td> </tr> <tr> <td style="font-family: monospace;">e396d1c03769a966f529b2480bd17c26</td> <td style="background-color: #cccccc;">[REDACTED]</td> <td style="font-family: monospace;">:/bin/mf2k-chprc06dp.x</td> </tr> <tr> <td style="font-family: monospace;">ae88ad1ee47b2a368716d9c13394b73a</td> <td style="background-color: #cccccc;">[REDACTED]</td> <td style="font-family: monospace;">:/bin/mf2k-mst-chprc06sp.x</td> </tr> <tr> <td style="font-family: monospace;">80429a2d296461a6b69425b0f9e25077</td> <td style="background-color: #cccccc;">[REDACTED]</td> <td style="font-family: monospace;">:/bin/mf2k-mst-chprc06dp.x</td> </tr> <tr> <td style="font-family: monospace;">69cc646caea7dba83b2eb44a9fafed8d</td> <td style="background-color: #cccccc;">[REDACTED]</td> <td style="font-family: monospace;">:/bin/mt3d-mst-chprc06sp.x</td> </tr> <tr> <td style="font-family: monospace;">4795224002dba418ebe47aa507fcac42</td> <td style="background-color: #cccccc;">[REDACTED]</td> <td style="font-family: monospace;">:/bin/mt3d-mst-chprc06dp.x</td> </tr> </table> <p>3. Executable Size (bytes): Uniquely identified by MD5 signatures listed above.</p>		c2d687beee9d58dc615995ce8220d9ea	[REDACTED]	:/bin/mf2k-chprc06sp.x	e396d1c03769a966f529b2480bd17c26	[REDACTED]	:/bin/mf2k-chprc06dp.x	ae88ad1ee47b2a368716d9c13394b73a	[REDACTED]	:/bin/mf2k-mst-chprc06sp.x	80429a2d296461a6b69425b0f9e25077	[REDACTED]	:/bin/mf2k-mst-chprc06dp.x	69cc646caea7dba83b2eb44a9fafed8d	[REDACTED]	:/bin/mt3d-mst-chprc06sp.x	4795224002dba418ebe47aa507fcac42	[REDACTED]	:/bin/mt3d-mst-chprc06dp.x
c2d687beee9d58dc615995ce8220d9ea	[REDACTED]	:/bin/mf2k-chprc06sp.x																	
e396d1c03769a966f529b2480bd17c26	[REDACTED]	:/bin/mf2k-chprc06dp.x																	
ae88ad1ee47b2a368716d9c13394b73a	[REDACTED]	:/bin/mf2k-mst-chprc06sp.x																	
80429a2d296461a6b69425b0f9e25077	[REDACTED]	:/bin/mf2k-mst-chprc06dp.x																	
69cc646caea7dba83b2eb44a9fafed8d	[REDACTED]	:/bin/mt3d-mst-chprc06sp.x																	
4795224002dba418ebe47aa507fcac42	[REDACTED]	:/bin/mt3d-mst-chprc06dp.x																	
<p>COMPILATION INFORMATION:</p> <p>4. Hardware System (i.e., property number or ID): WD56054 (PNNL Property System); RANSAC Linux Cluster</p> <p>5. Operating System (include version number): Red Hat Enterprise Linux WS 3 (Taroon Update 7)</p>																			
<p>INSTALLATION AND CHECKOUT INFORMATION:</p> <p>6. Hardware System (i.e., property number or ID): Tellus Modeling Platform</p> <p>7. Operating System (include version number): Linux 2.6.18-308.4.1.el5 #1 SMP Tue Apr 17 17:08:00 EDT 2012 x86_64 x86_64 x86_64 GNU/Linux</p> <p>8. Open Problem Report? <input checked="" type="radio"/> No <input type="radio"/> Yes PR/CR No.</p>																			
<p>TEST CASE INFORMATION:</p> <p>9. Directory/Path: [REDACTED],superc,bin</p> <p>10. Procedure(s): CHPRC-00259 Rev 2, MODFLOW and Related Codes Software Test Plan</p> <p>11. Libraries: N/A (static linking)</p> <p>12. Input Files: Test suite per CHPRC-00259 Rev. 2 installed in [REDACTED],superc/test/modflow/build-6/</p> <p>13. Output Files: Test results in [REDACTED],superc/test/modflow/build-6; Results summarized in log file run-install-tests-all-nodes.log</p> <p>14. Test Cases: MF-ITC-1 (both standard and MST versions of MODFLOW); single & double precision versions MT-ITC-1 run single & double precision versions</p>																			

CHPRC SOFTWARE INSTALLATION AND CHECKOUT FORM (continued)		
1. Software Name: <u>MODFLOW and Related Codes</u>	Software Version No.: <u>Bld 6</u>	
14. Test Cases: MF-ITC-1 (both standard and MST versions of MODFLOW); run both single & double precision MT-ITC-1 run for single and double precision, multiple solvers		
15. Test Case Results: Exact match for MF2K and MF2K-MST executable files and single-precision MT3DMS-MST single-precision executable file. A minor text difference was detected in MT3DMS-MST double-precision output was evaluated and found insignificant. All tests are rated PASS.		
16. Test Performed By: <u>WE Nichols</u>		
17. Test Results: <input checked="" type="radio"/> Satisfactory, Accepted for Use <input type="radio"/> Unsatisfactory		
18. Disposition (include HISI update): This supercedes prior installation test of CHPRC Build 6 of these executables performed to revalidate this installation following OS upgrade (configuration change).		
Prepared By:		
19. _____	 <u>WE Nichols</u>	_____ Print _____ Date _____
20. Test Personnel:		
_____	<u>WE Nichols</u>	_____
Sign	Print	Date
_____	_____	_____
Sign	Print	Date
_____	_____	_____
Sign	Print	Date
Approved By:		
21. _____	<u>N/R (CHPRC-00258 Rev. 2)</u>	_____
Software SME (Signature)	Print	Date

Attachment B

Simulation Results from Selected Pump-and-Treat Scenarios

**0 Years
Technetium-99
No Action**



P2R_FS_tc99_0.png (DoubleFigure_FS.mxd)

Figure B-1 - Plan view contours of the technetium-99 plume at simulation time 0 years based on the remedial evaluation case simulation.

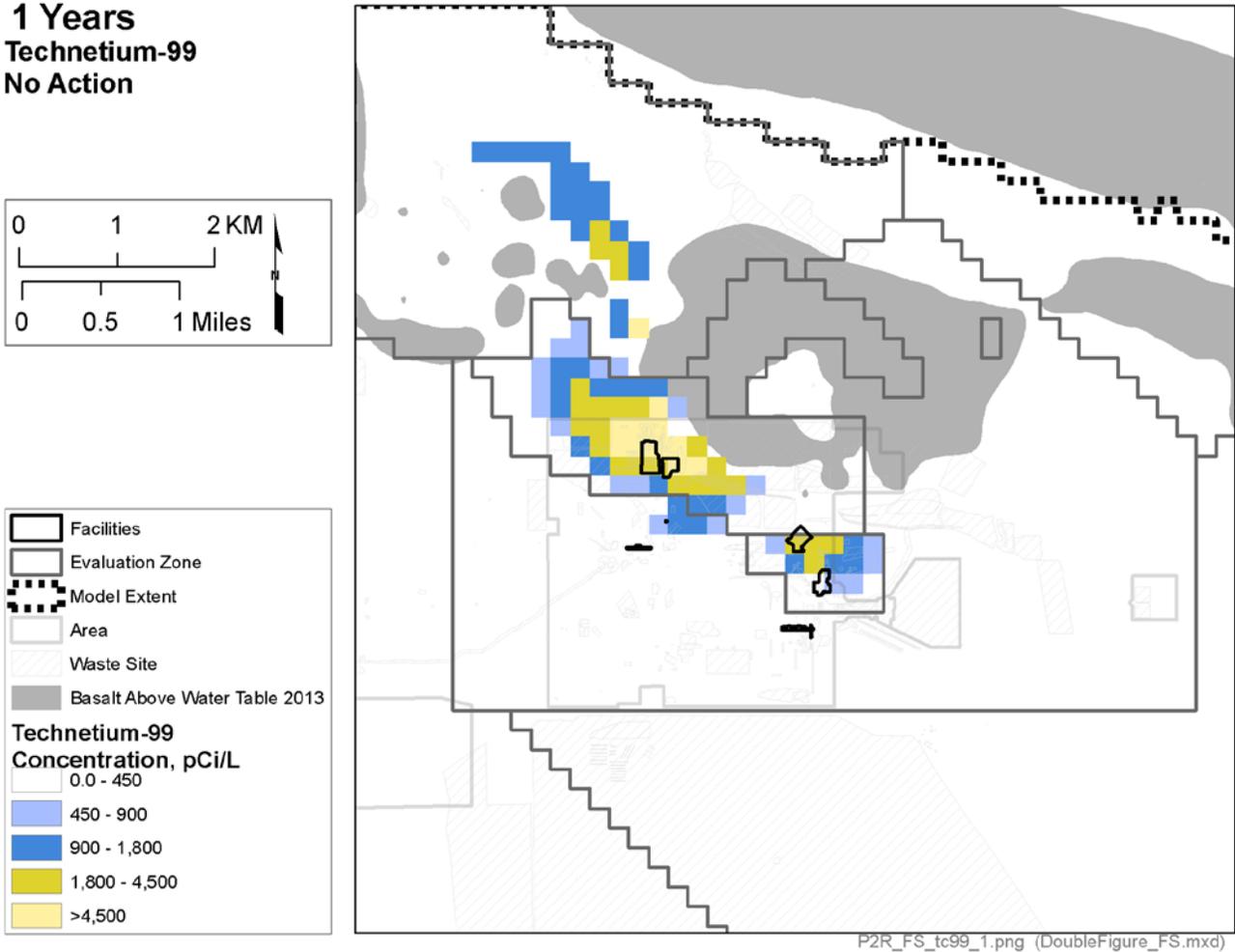
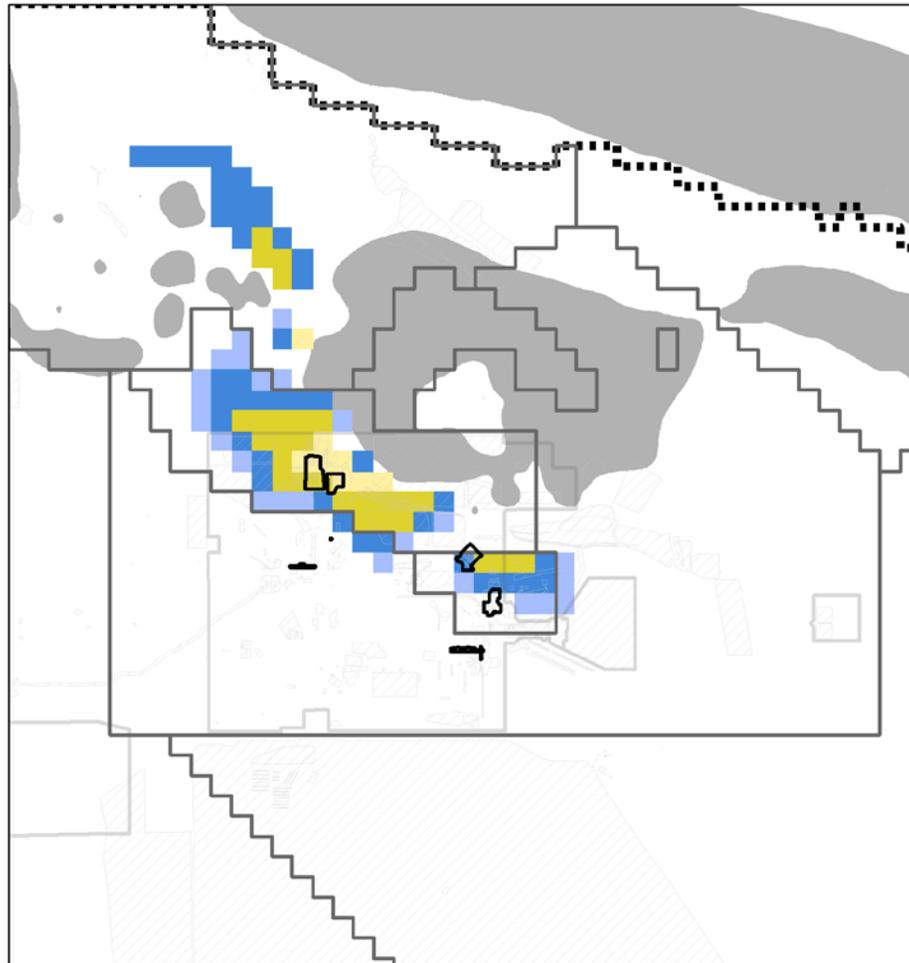
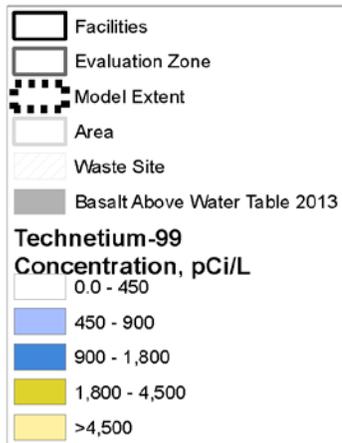
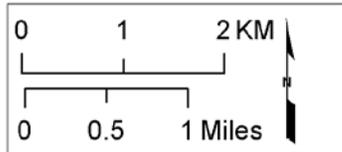


Figure B-2 - Plan view contours of the technetium-99 plume at simulation time 1 years based on the remedial evaluation case simulation.

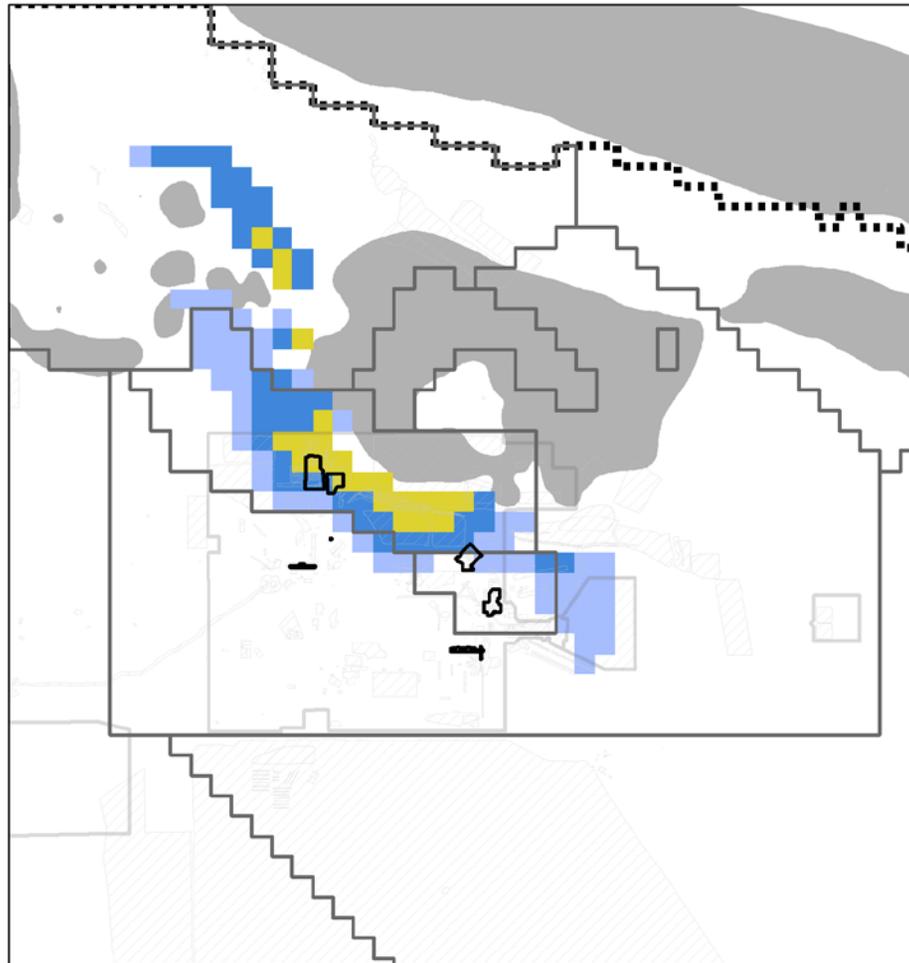
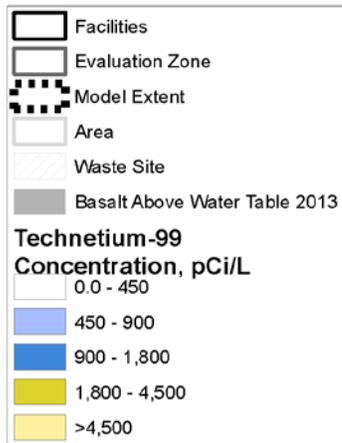
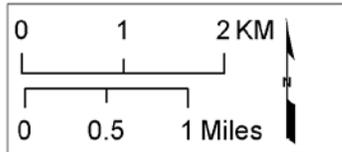
**2 Years
Technetium-99
No Action**



P2R_FS_tc99_2.png (DoubleFigure_FS.mxd)

Figure B-3 - Plan view contours of the technetium-99 plume at simulation time 2 years based on the remedial evaluation case simulation.

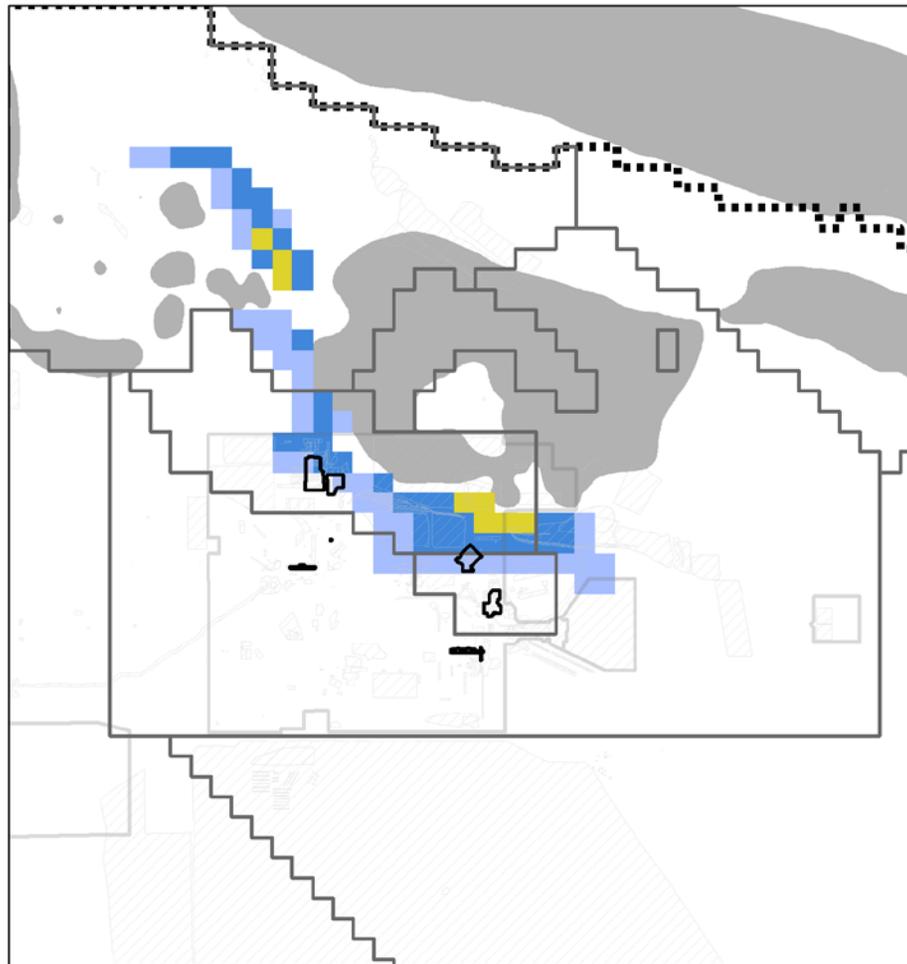
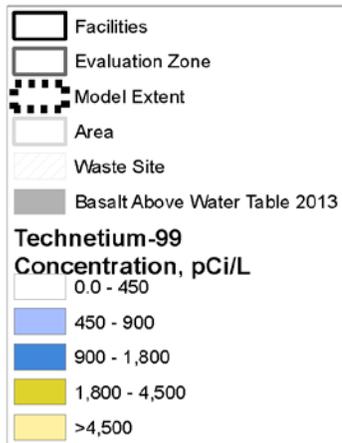
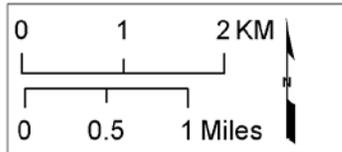
**5 Years
Technetium-99
No Action**



P2R_FS_tc99_5.png (DoubleFigure_FS.mxd)

Figure B-4 - Plan view contours of the technetium-99 plume at simulation time 5 years based on the remedial evaluation case simulation.

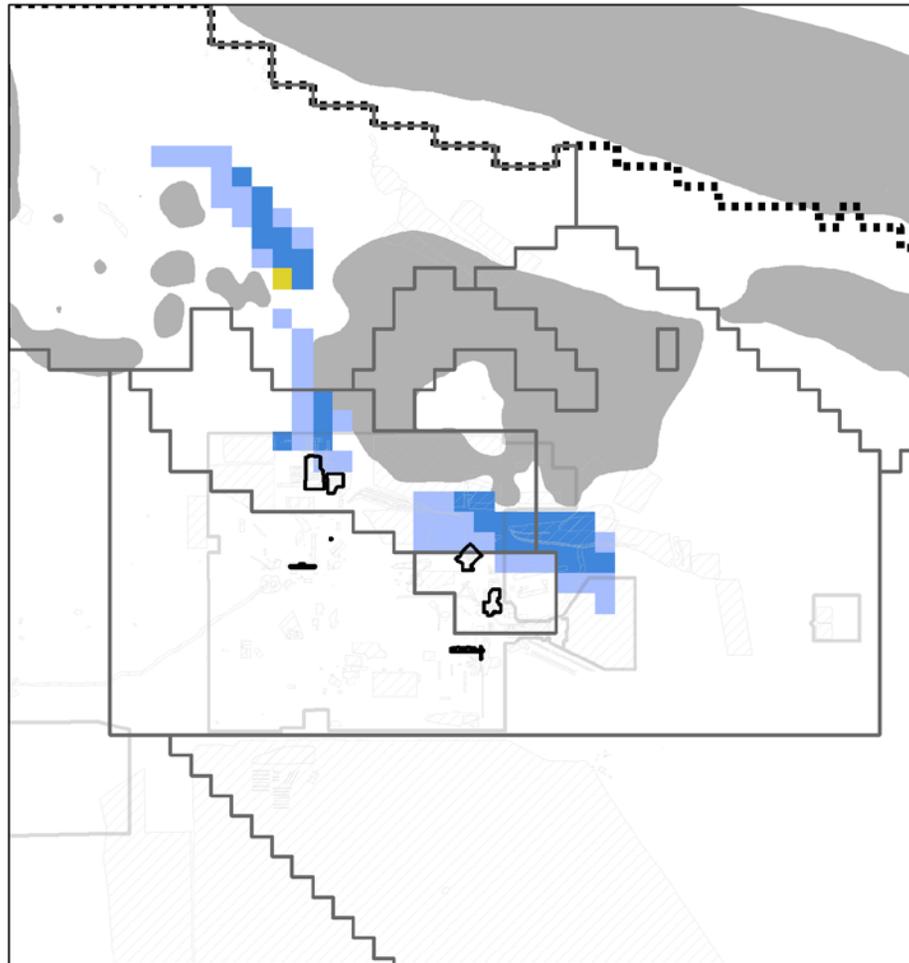
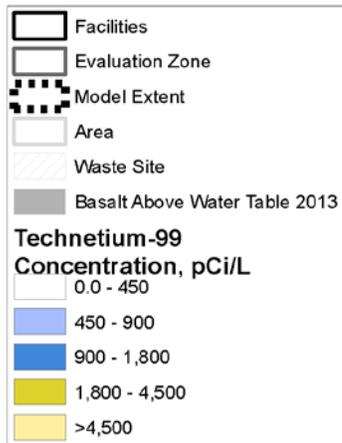
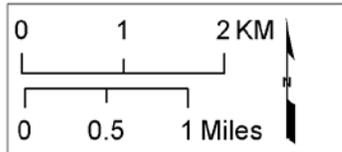
**10 Years
Technetium-99
No Action**



P2R_FS_tc99_10.png (DoubleFigure_FS.mxd)

Figure B-5 - Plan view contours of the technetium-99 plume at simulation time 10 years based on the remedial evaluation case simulation.

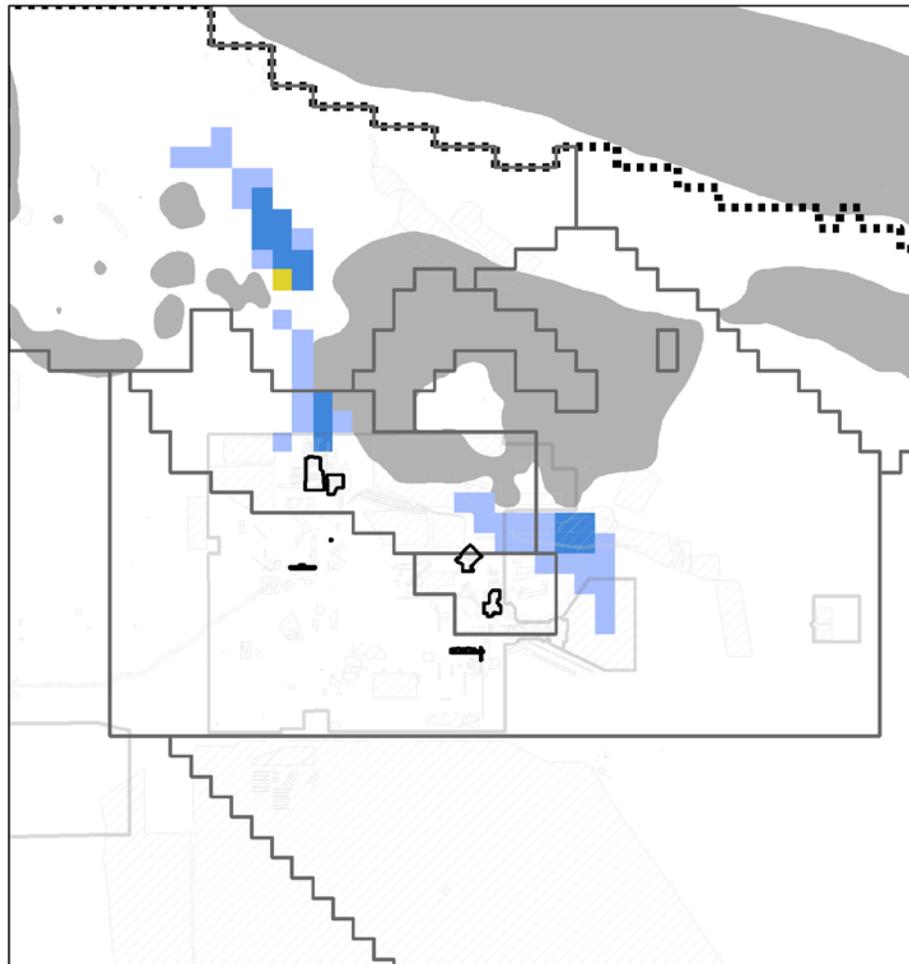
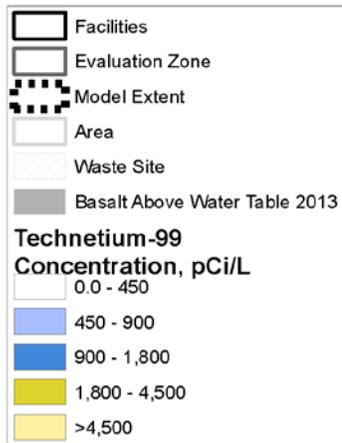
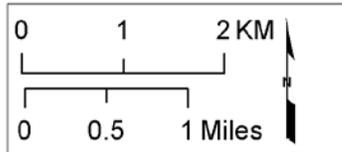
**15 Years
Technetium-99
No Action**



P2R_FS_tc99_15.png (DoubleFigure_FS.mxd)

Figure B-6 - Plan view contours of the technetium-99 plume at simulation time 15 years based on the remedial evaluation case simulation.

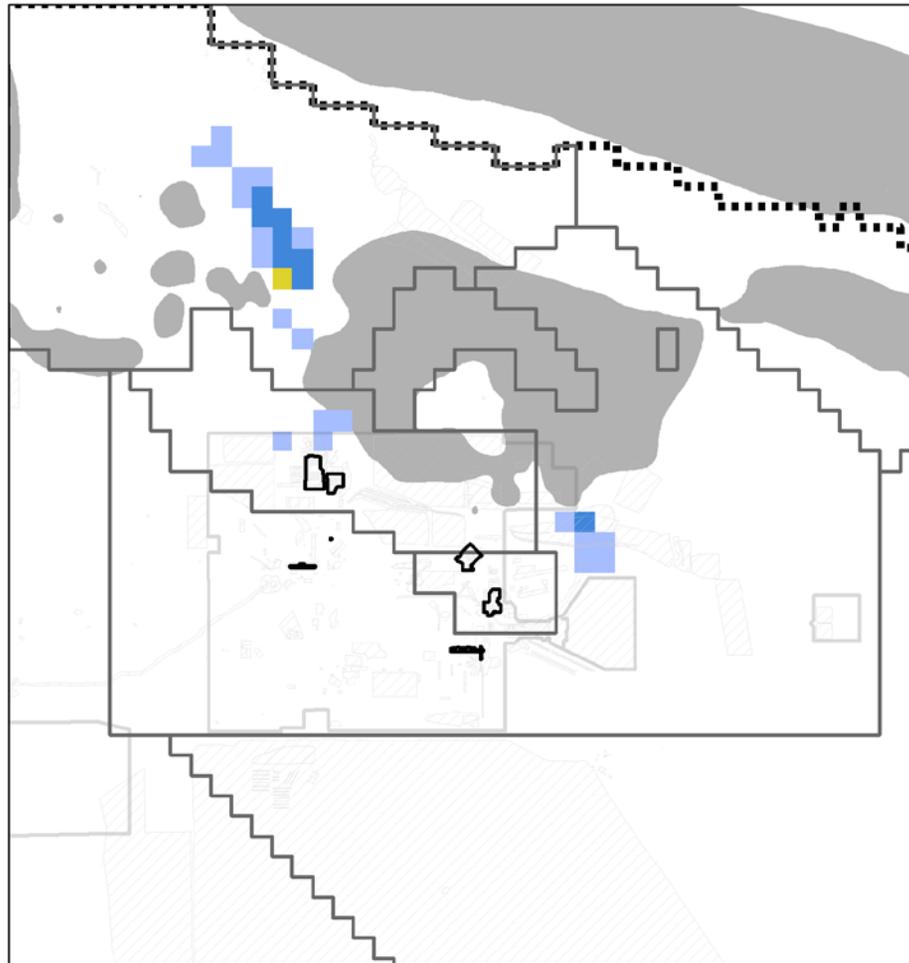
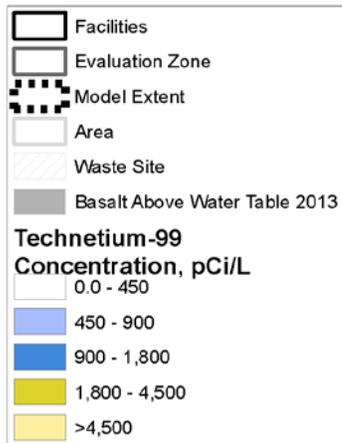
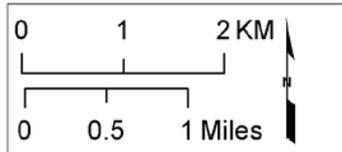
**20 Years
Technetium-99
No Action**



P2R_FS_tc99_20.png (DoubleFigure_FS.mxd)

Figure B-7 - Plan view contours of the technetium-99 plume at simulation time 20 years based on the remedial evaluation case simulation.

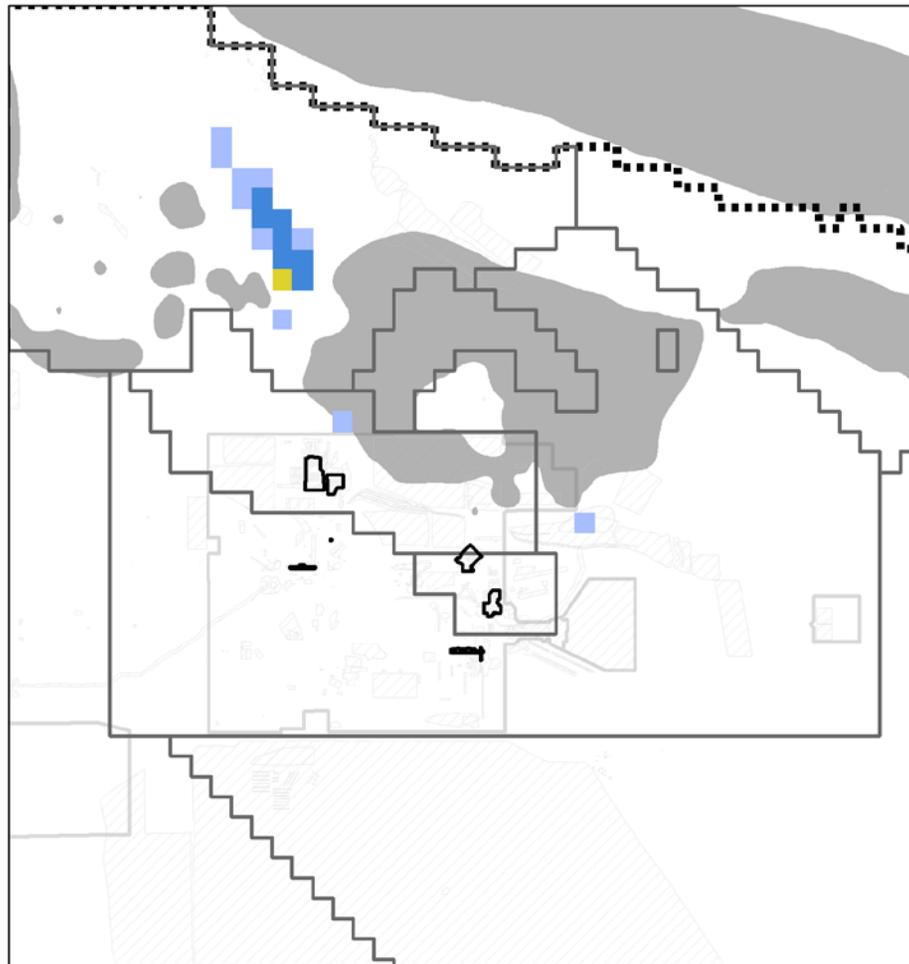
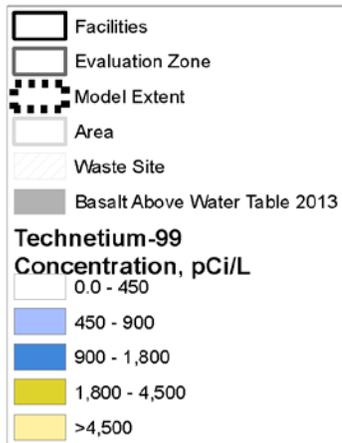
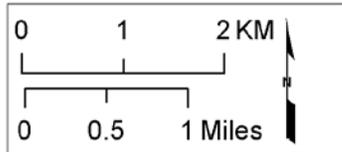
**25 Years
Technetium-99
No Action**



P2R_FS_tc99_25.png (DoubleFigure_FS.mxd)

Figure B-8 - Plan view contours of the technetium-99 plume at simulation time 25 years based on the remedial evaluation case simulation.

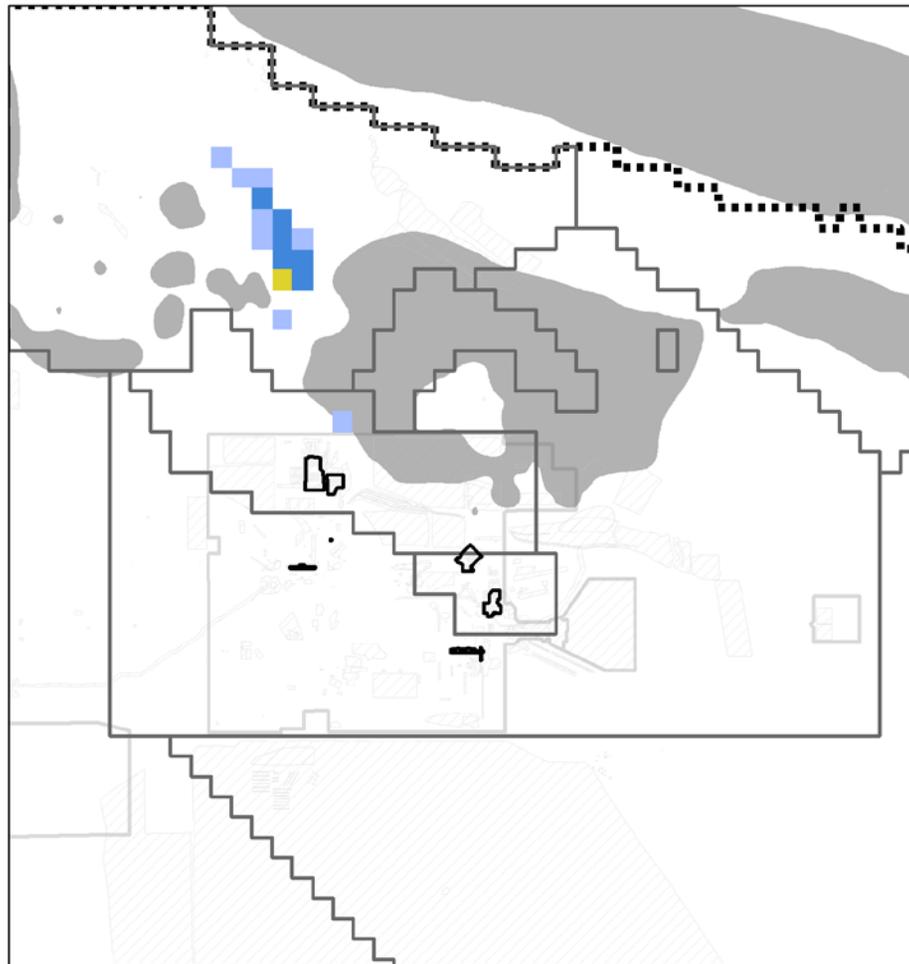
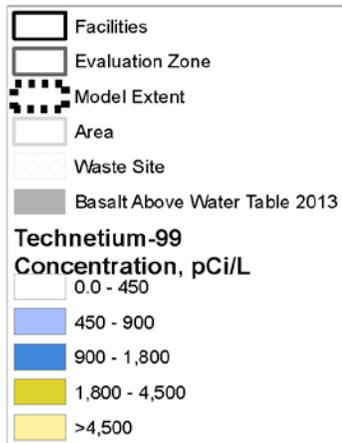
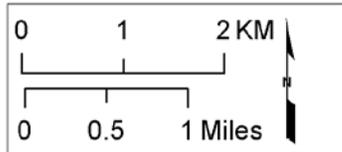
**30 Years
Technetium-99
No Action**



P2R_FS_tc99_30.png (DoubleFigure_FS.mxd)

Figure B-9 - Plan view contours of the technetium-99 plume at simulation time 30 years based on the remedial evaluation case simulation.

**50 Years
Technetium-99
No Action**



P2R_FS_tc99_50.png (DoubleFigure_FS.mxd)

Figure B-10 - Plan view contours of the technetium-99 plume at simulation time 50 years based on the remedial evaluation case simulation.

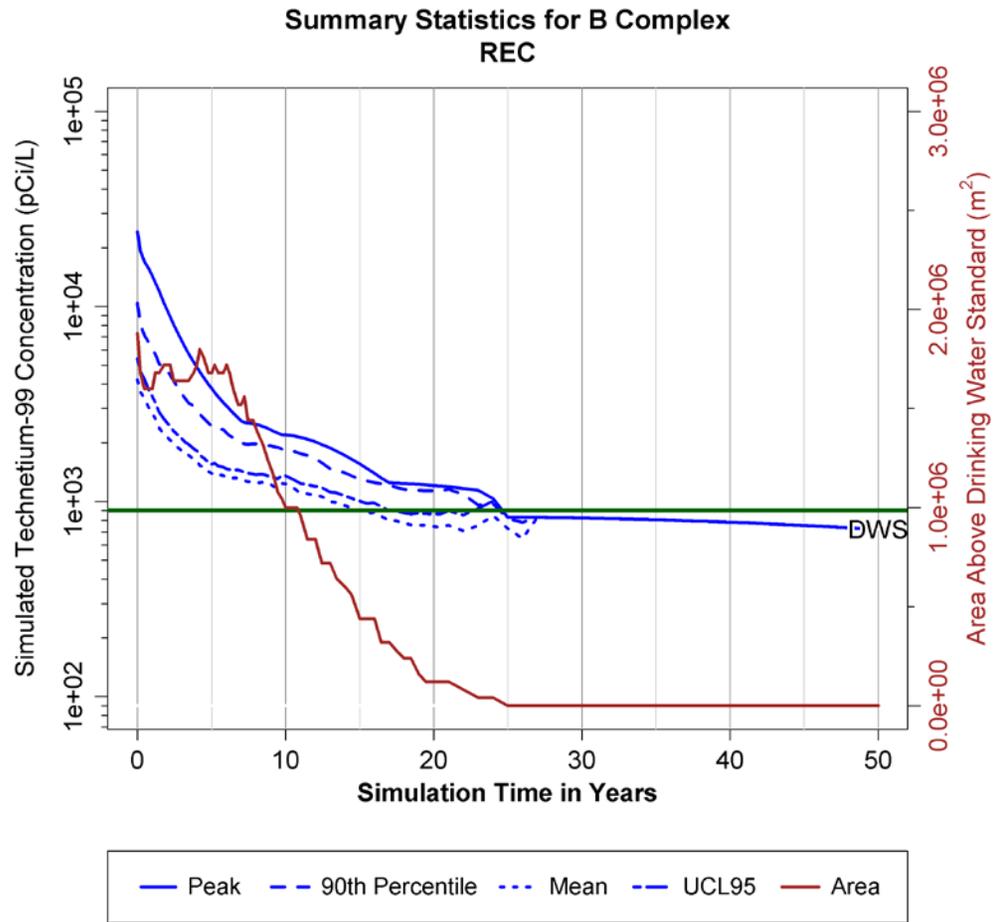


Figure B-11 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the remedial evaluation case simulation.

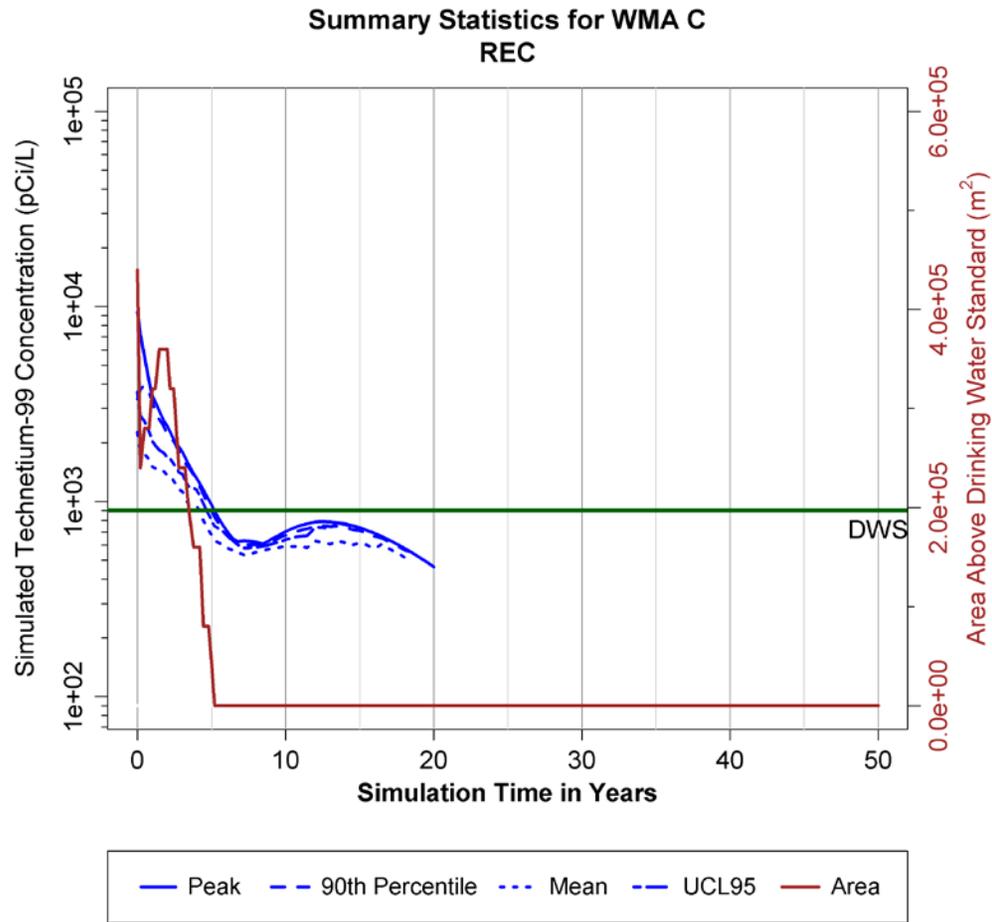


Figure B-12 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the remedial evaluation case simulation.

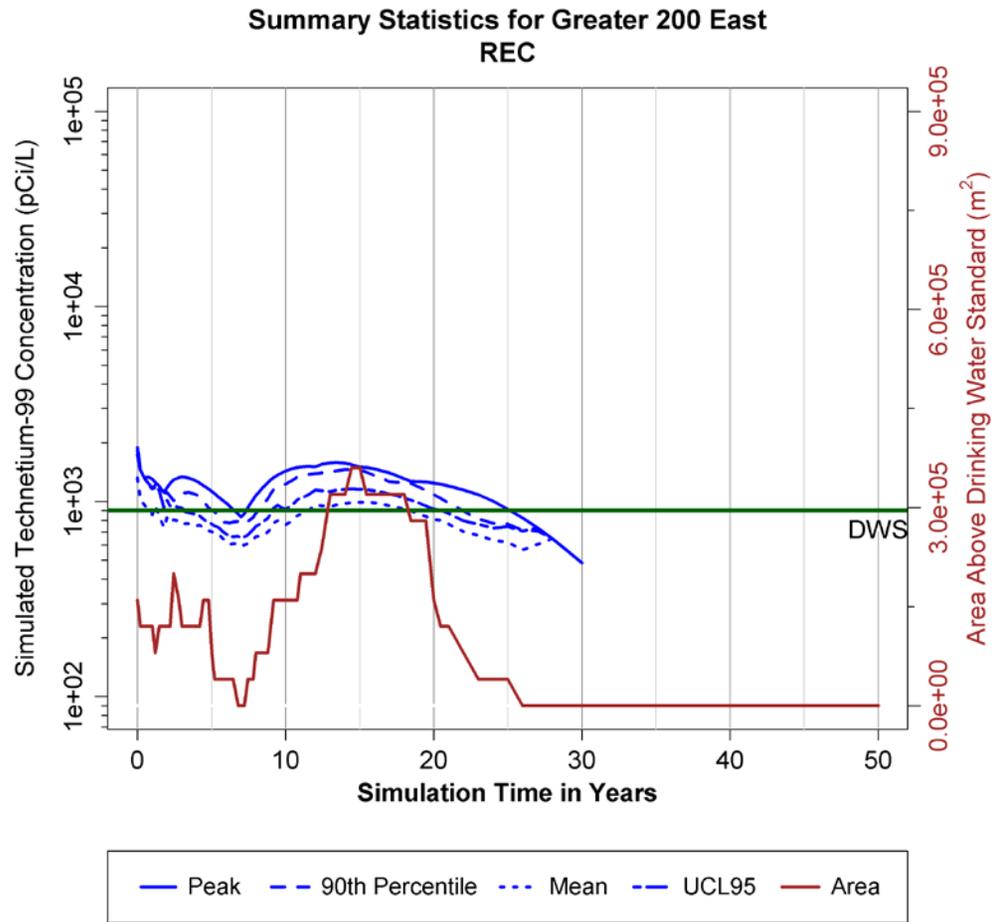


Figure B-13 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the remedial evaluation case simulation.

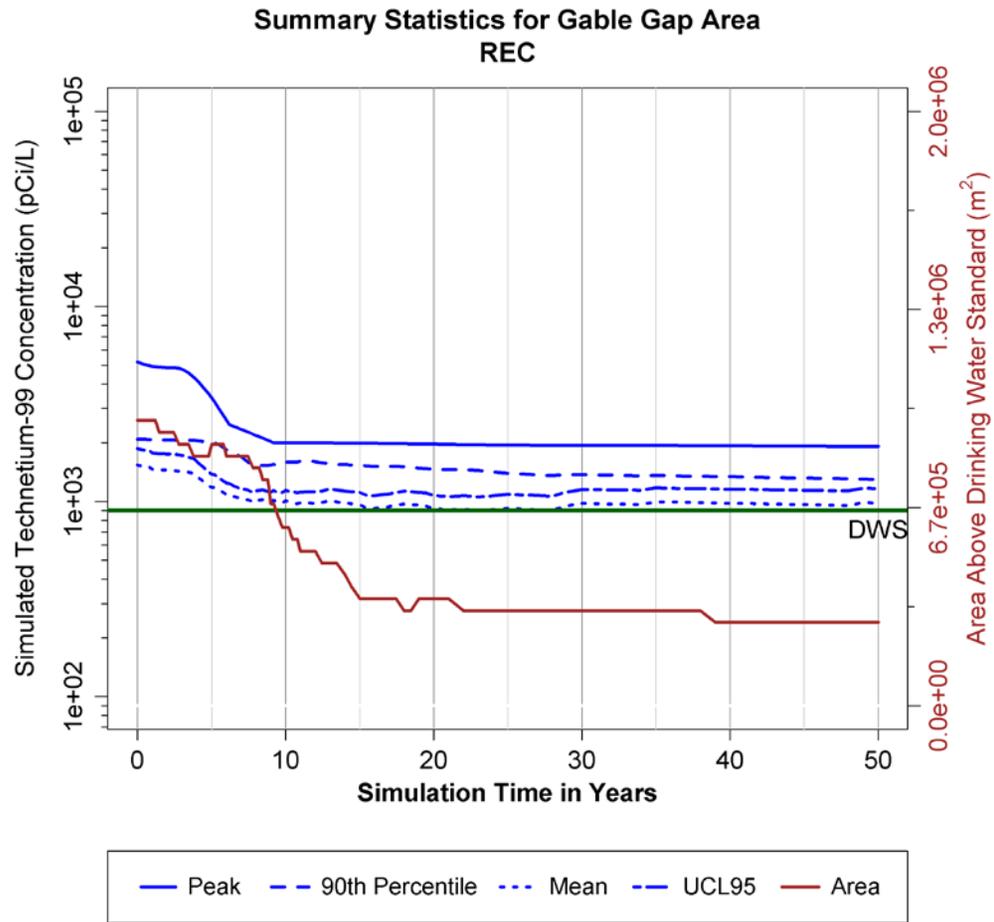


Figure B-14 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the remedial evaluation case simulation.

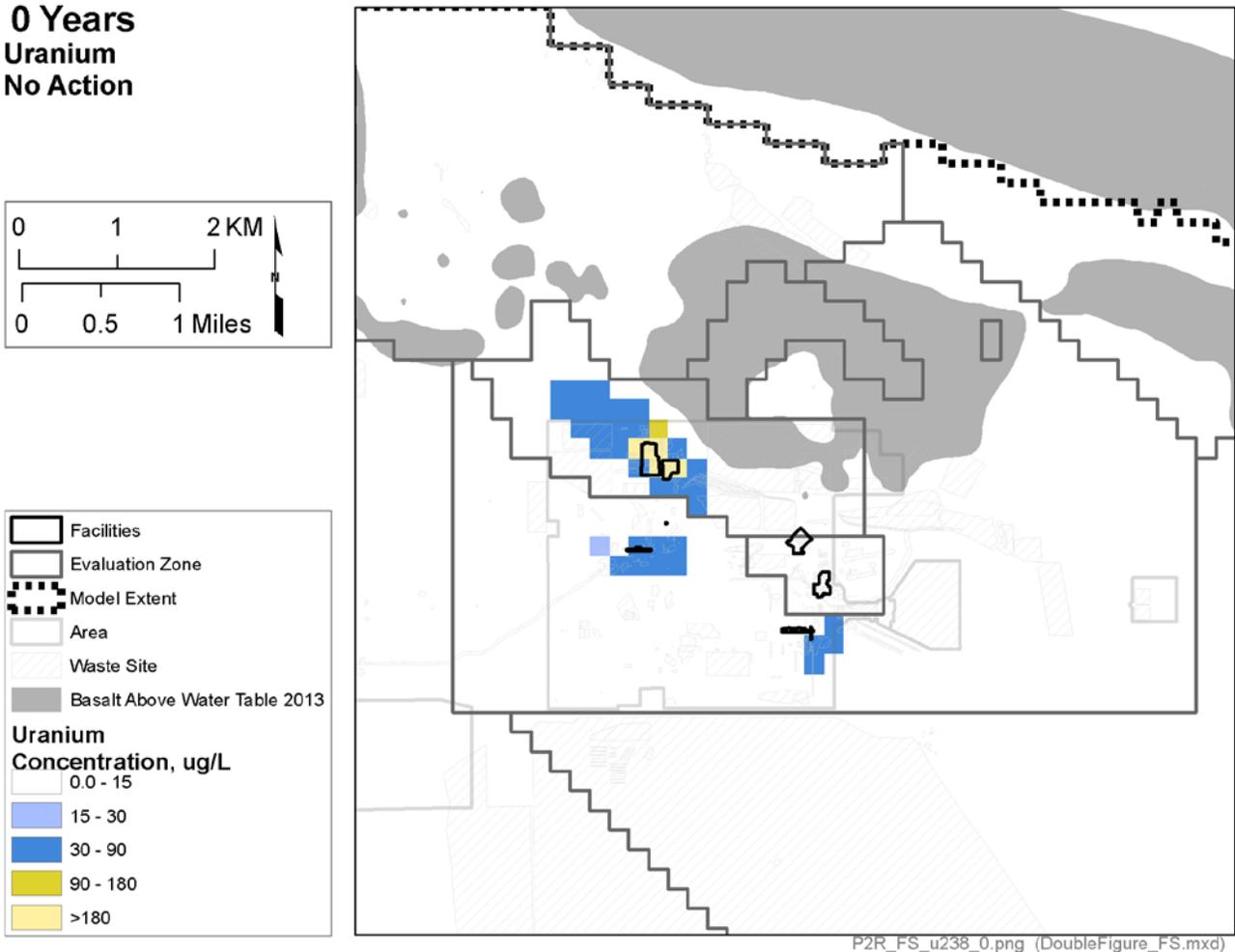
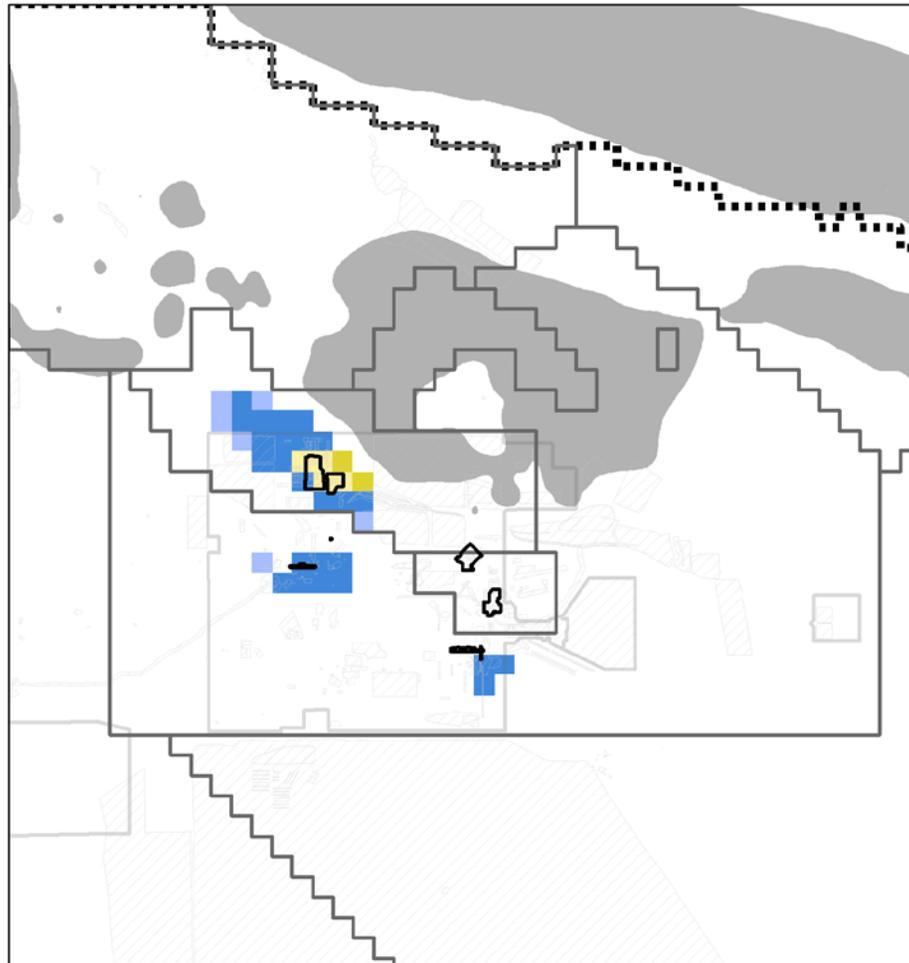
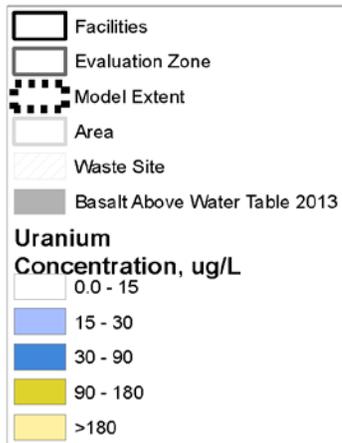
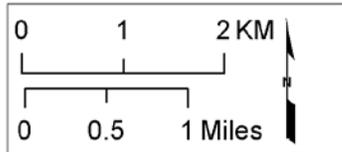


Figure B-15 - Plan view contours of the uranium plume at simulation time 0 years based on the remedial evaluation case simulation.

**1 Years
Uranium
No Action**



P2R_FS_u238_1.png (DoubleFigure_FS.mxd)

Figure B-16 - Plan view contours of the uranium plume at simulation time 1 years based on the remedial evaluation case simulation.

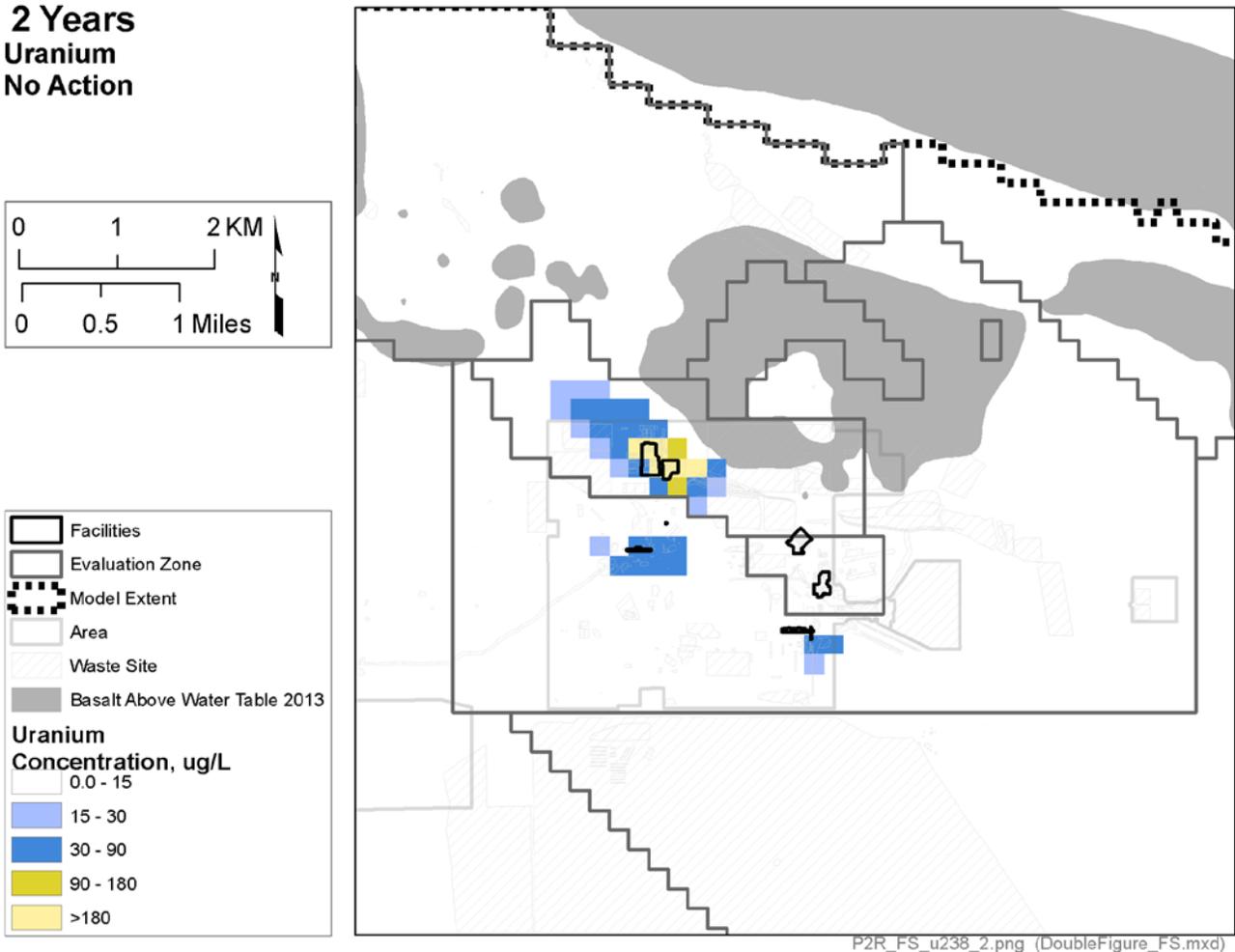


Figure B-17 - Plan view contours of the uranium plume at simulation time 2 years based on the remedial evaluation case simulation.

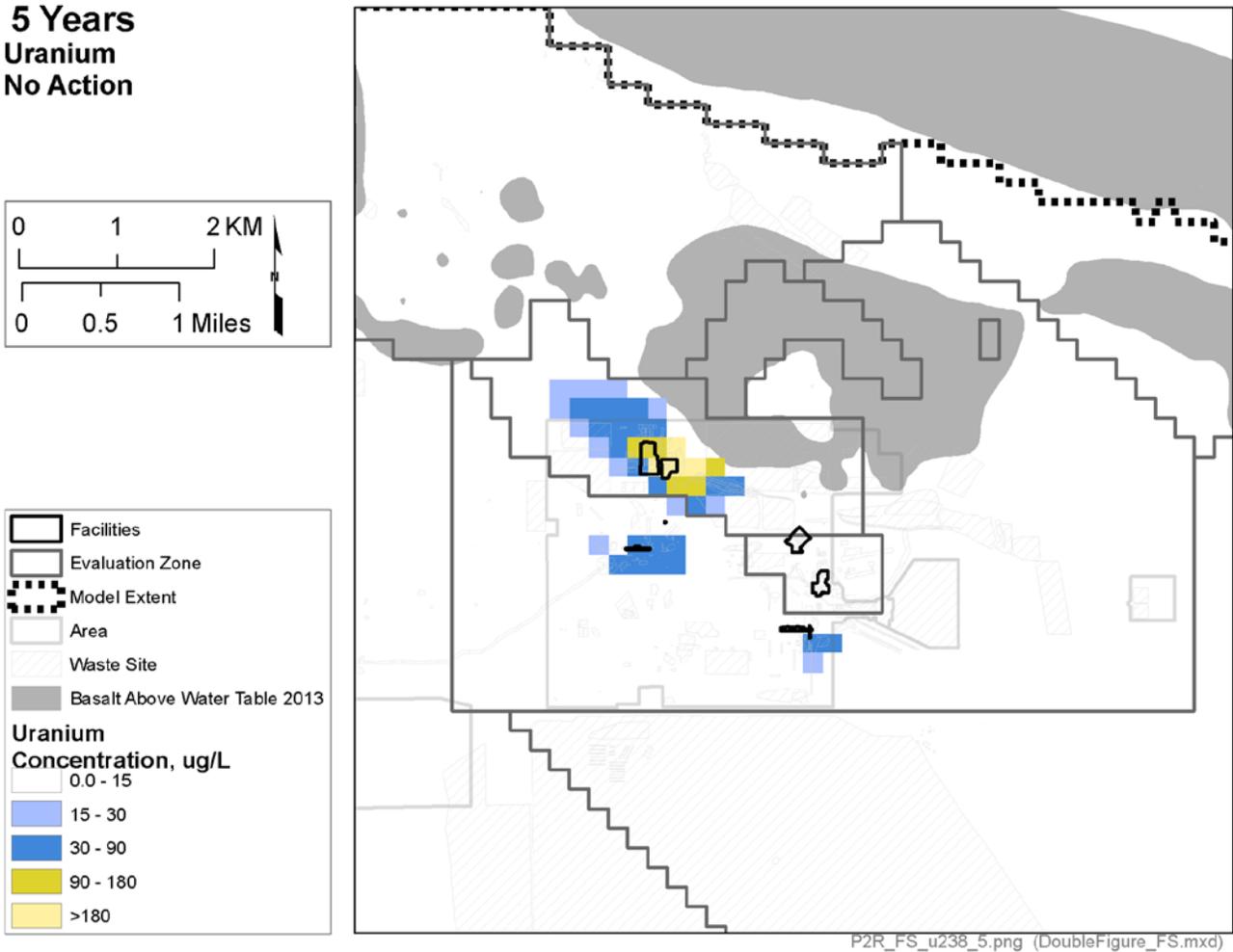
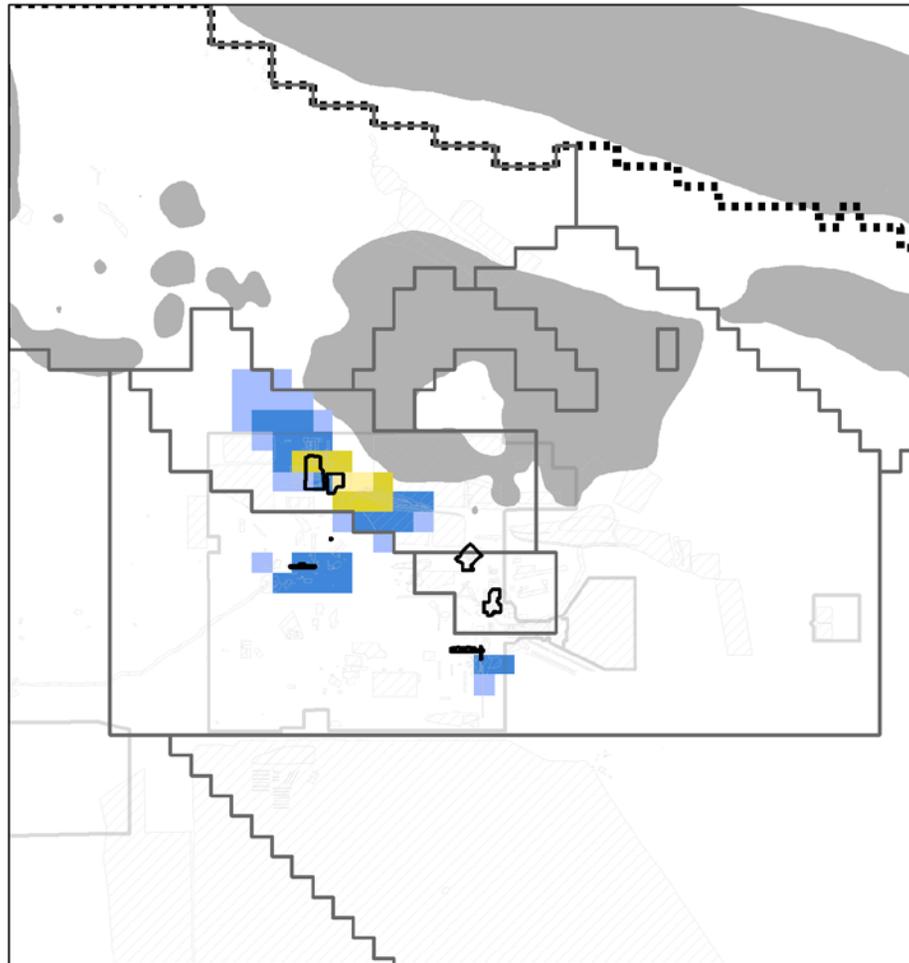
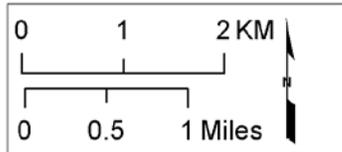


Figure B-18 - Plan view contours of the uranium plume at simulation time 5 years based on the remedial evaluation case simulation.

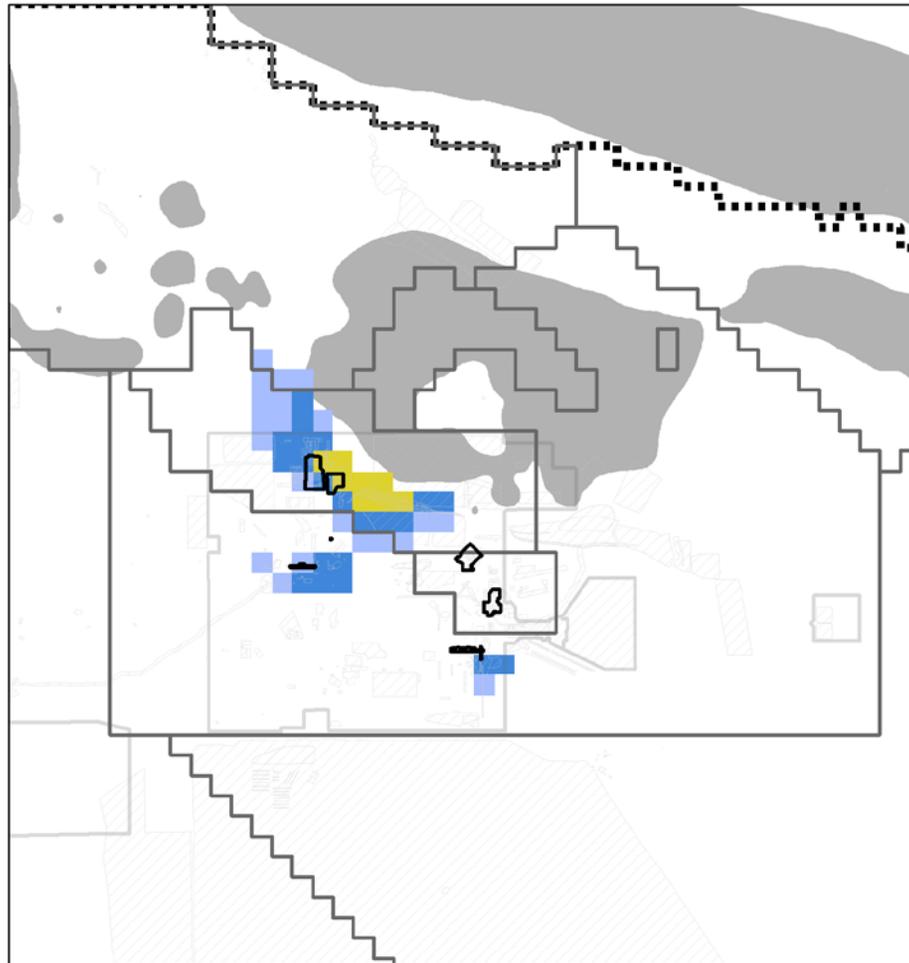
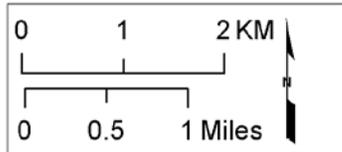
**10 Years
Uranium
No Action**



P2R_FS_u238_10.png (DoubleFigure_FS.mxd)

Figure B-19 - Plan view contours of the uranium plume at simulation time 10 years based on the remedial evaluation case simulation.

**15 Years
Uranium
No Action**



P2R_FS_u238_15.png (DoubleFigure_FS.mxd)

Figure B-20 - Plan view contours of the uranium plume at simulation time 15 years based on the remedial evaluation case simulation.

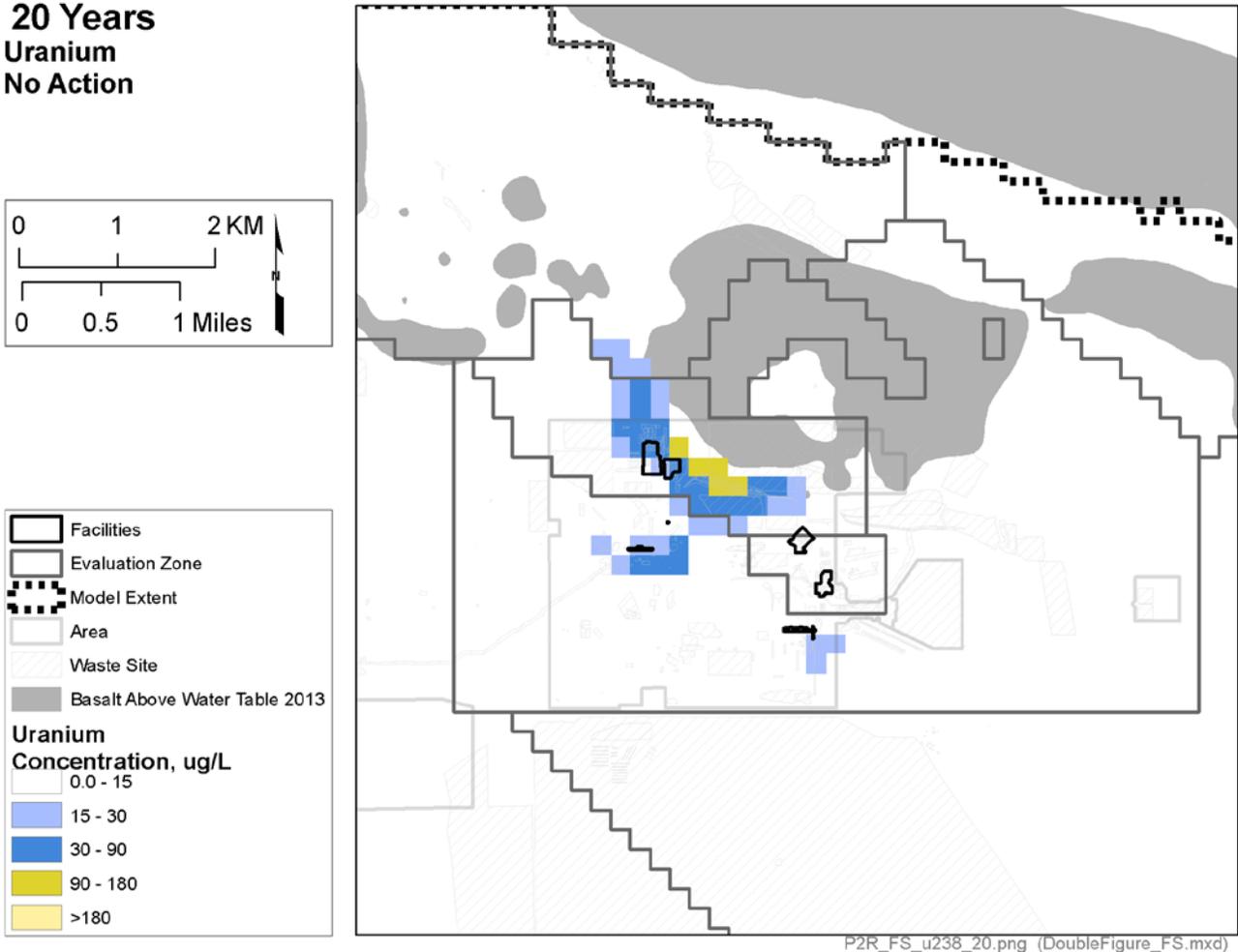
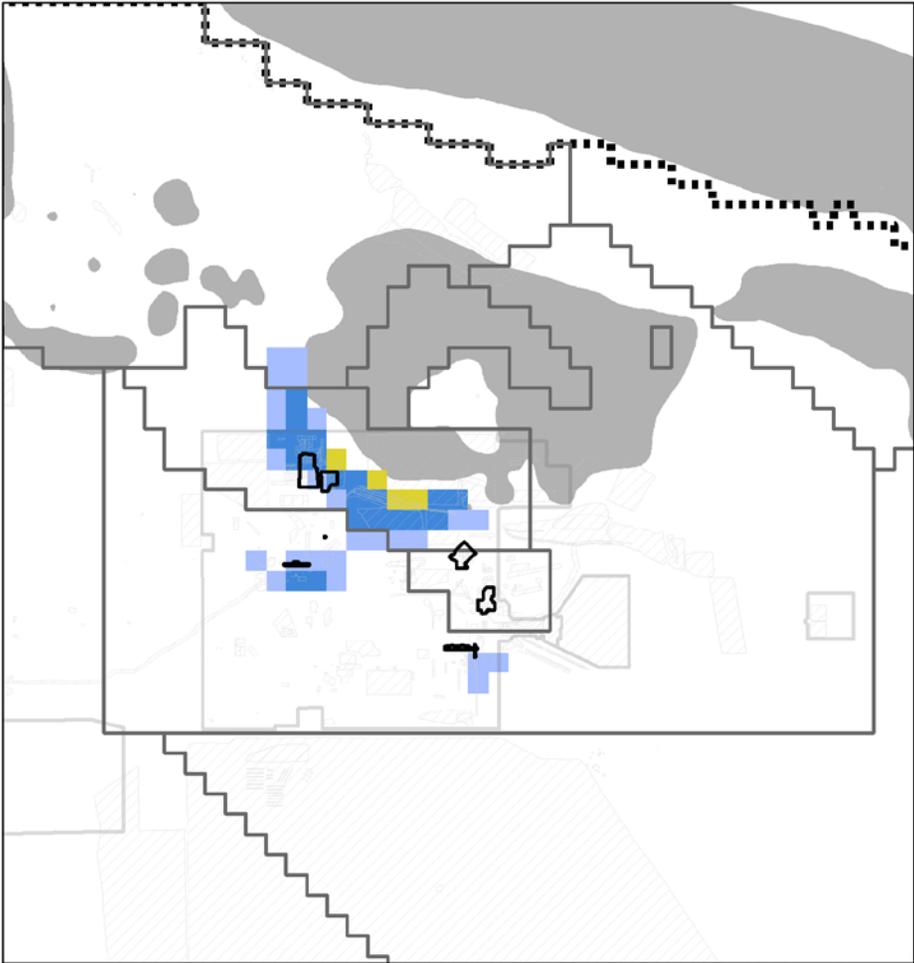
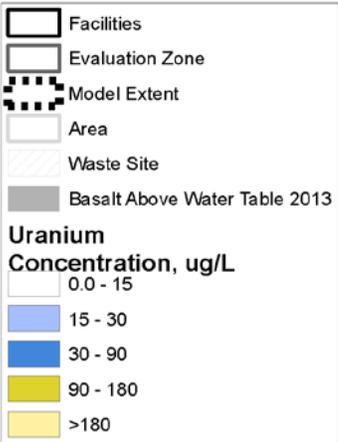
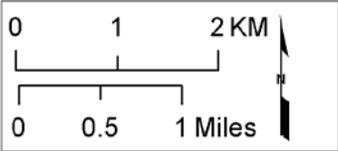


Figure B-21 - Plan view contours of the uranium plume at simulation time 20 years based on the remedial evaluation case simulation.

**25 Years
Uranium
No Action**



P2R_FS_u238_25.png (DoubleFigure_FS.mxd)

Figure B-22 - Plan view contours of the uranium plume at simulation time 25 years based on the remedial evaluation case simulation.

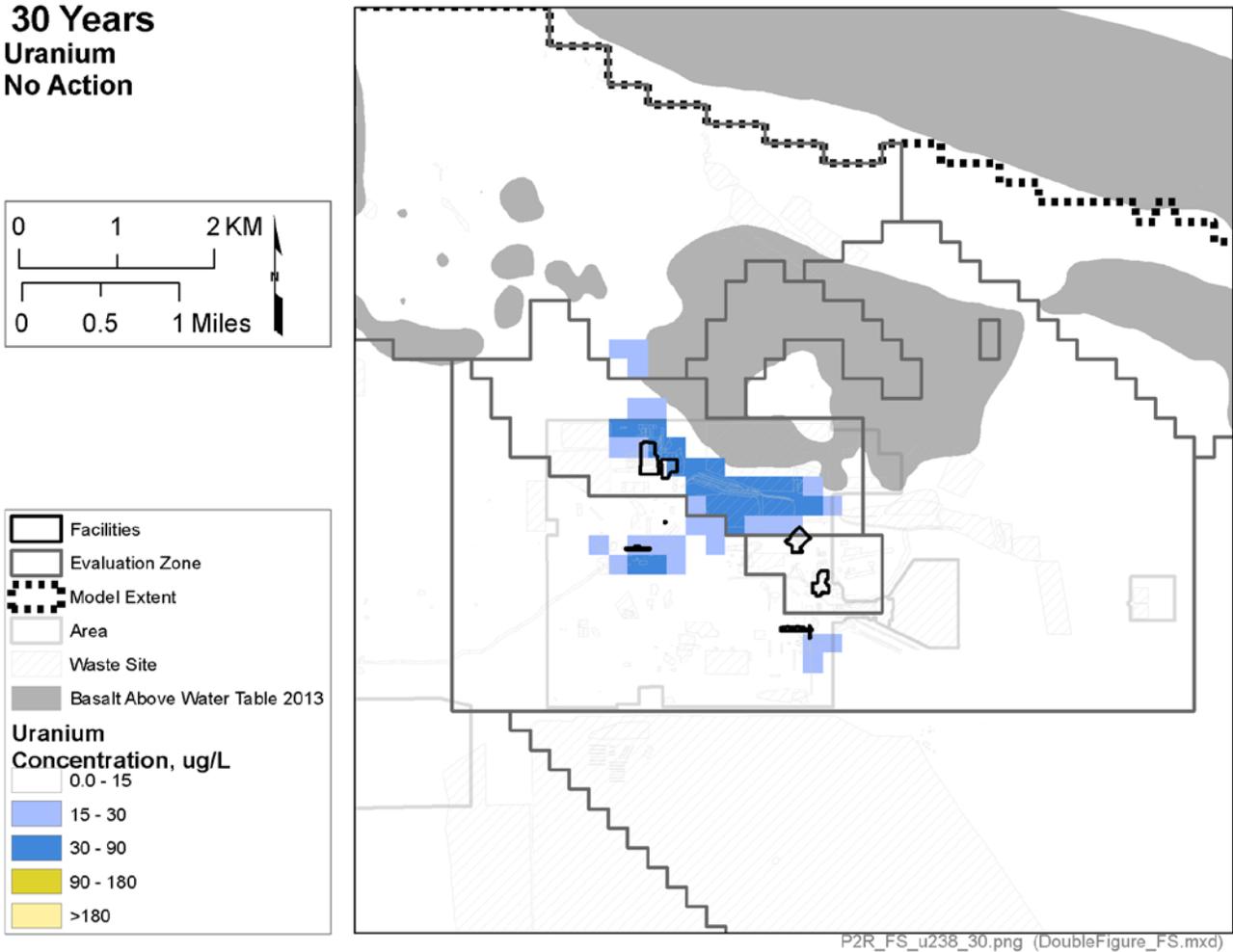
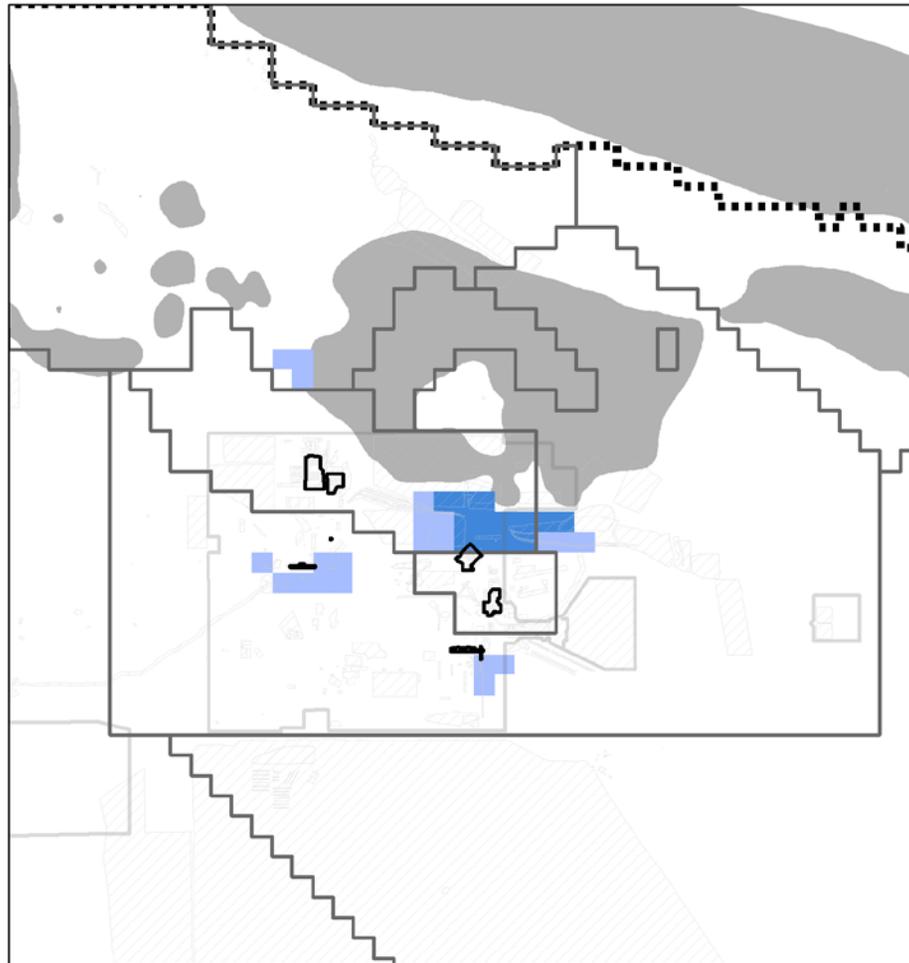
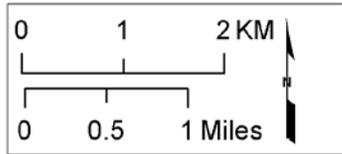


Figure B-23 - Plan view contours of the uranium plume at simulation time 30 years based on the remedial evaluation case simulation.

**50 Years
Uranium
No Action**



P2R_FS_u238_50.png (DoubleFigure_FS.mxd)

Figure B-24 - Plan view contours of the uranium plume at simulation time 50 years based on the remedial evaluation case simulation.

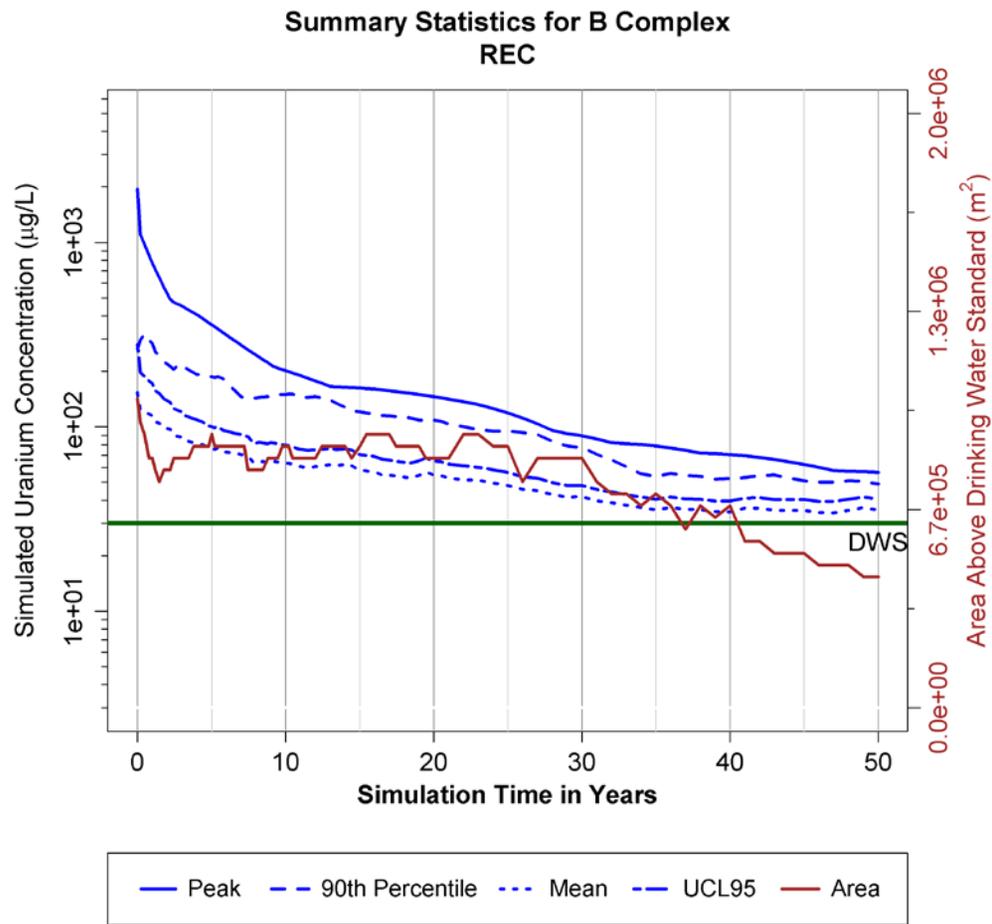


Figure B-25 - Statistical summary of simulated concentration within the model domain for the uranium plume for the remedial evaluation case simulation.

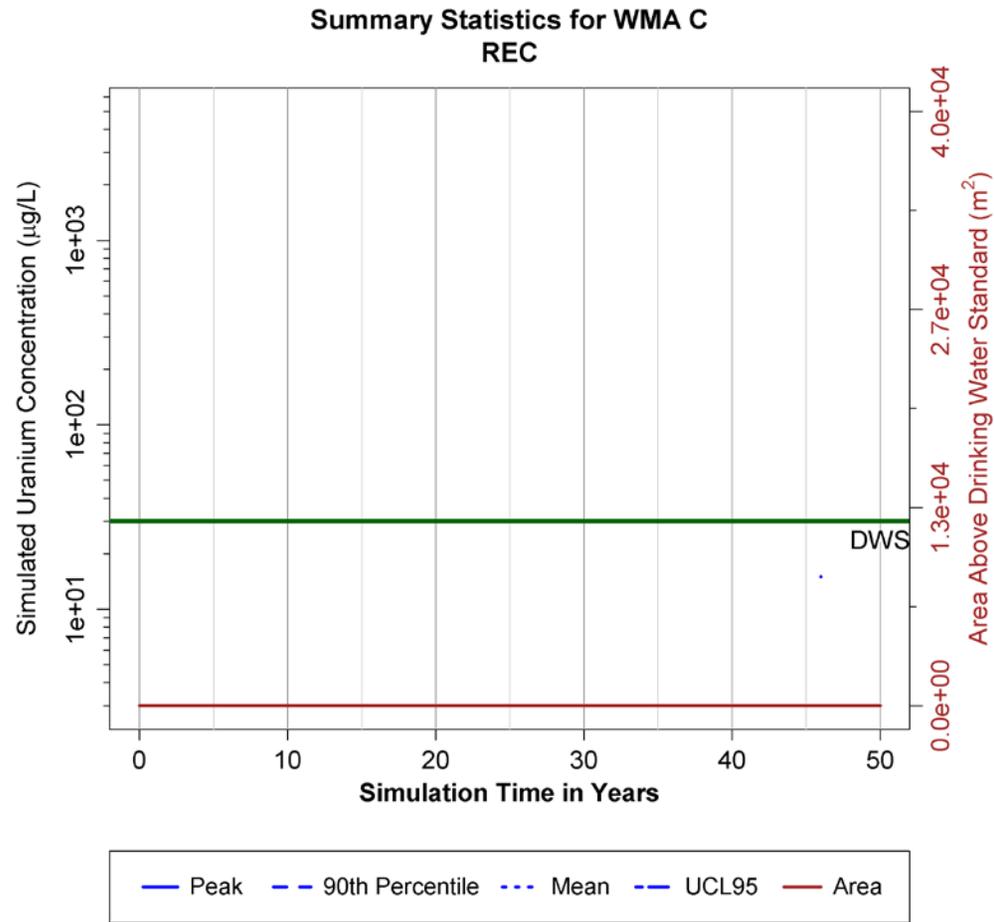


Figure B-26 - Statistical summary of simulated concentration within the model domain for the uranium plume for the remedial evaluation case simulation.

Summary Statistics for Greater 200 East
REC

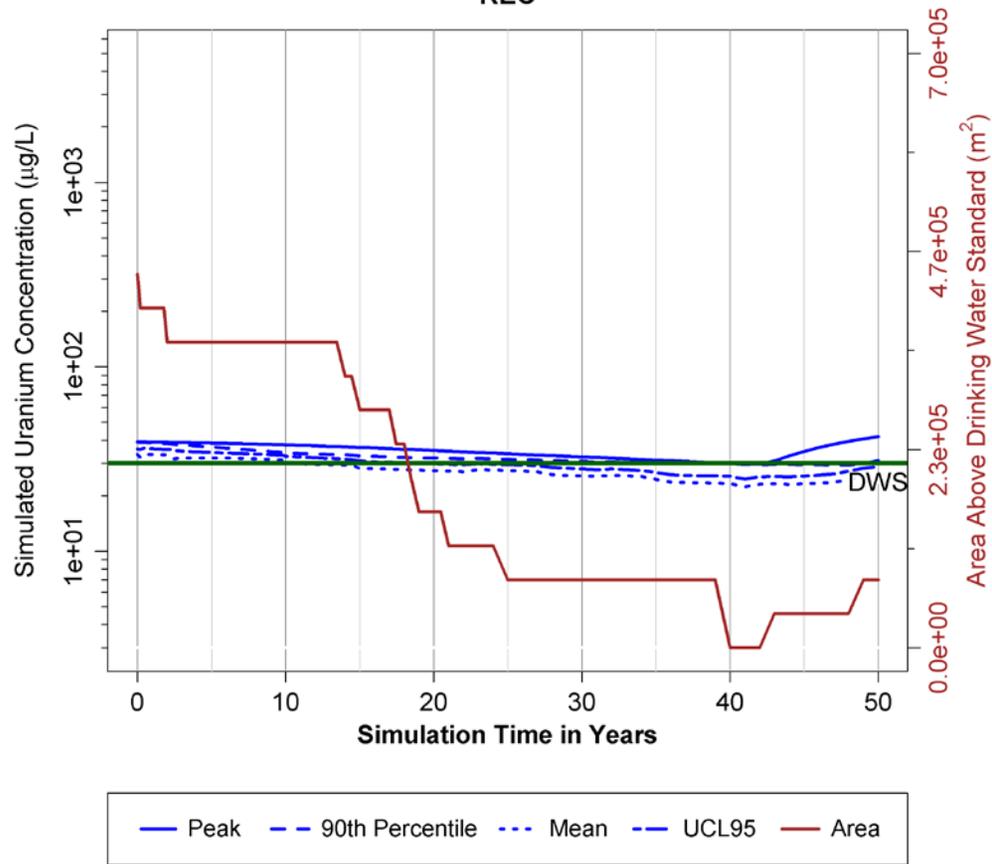


Figure B-27 - Statistical summary of simulated concentration within the model domain for the uranium plume for the remedial evaluation case simulation.

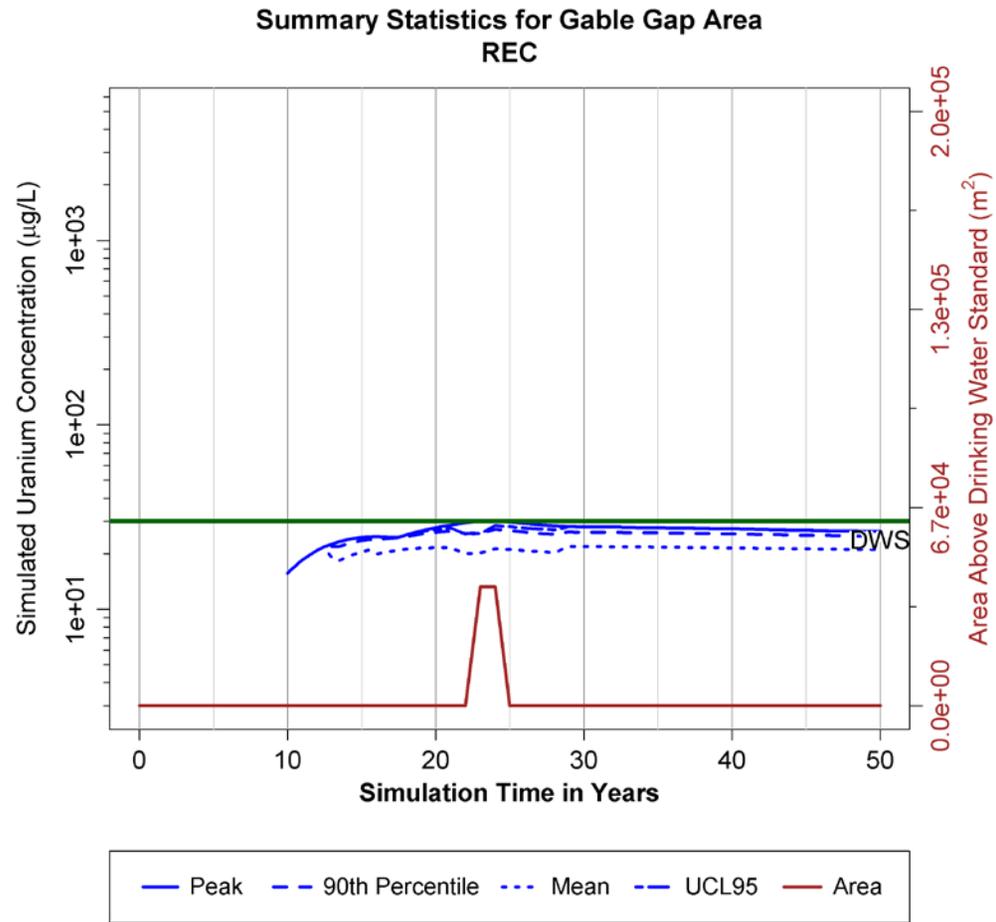
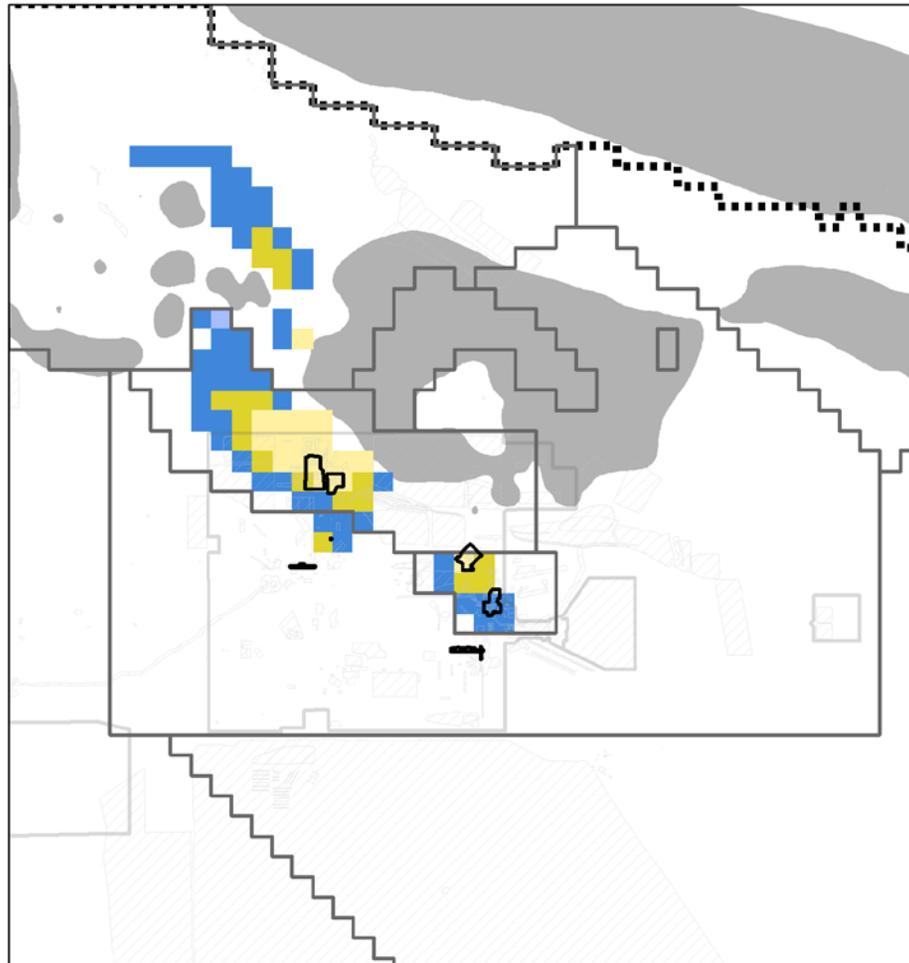
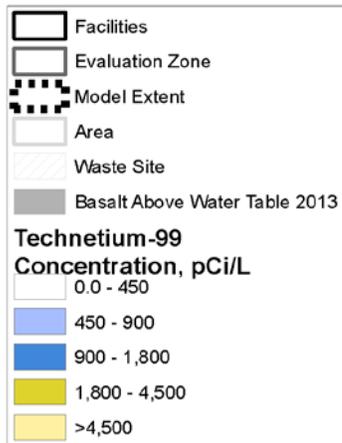
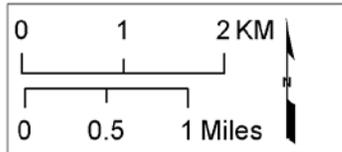


Figure B-28 - Statistical summary of simulated concentration within the model domain for the uranium plume for the remedial evaluation case simulation.

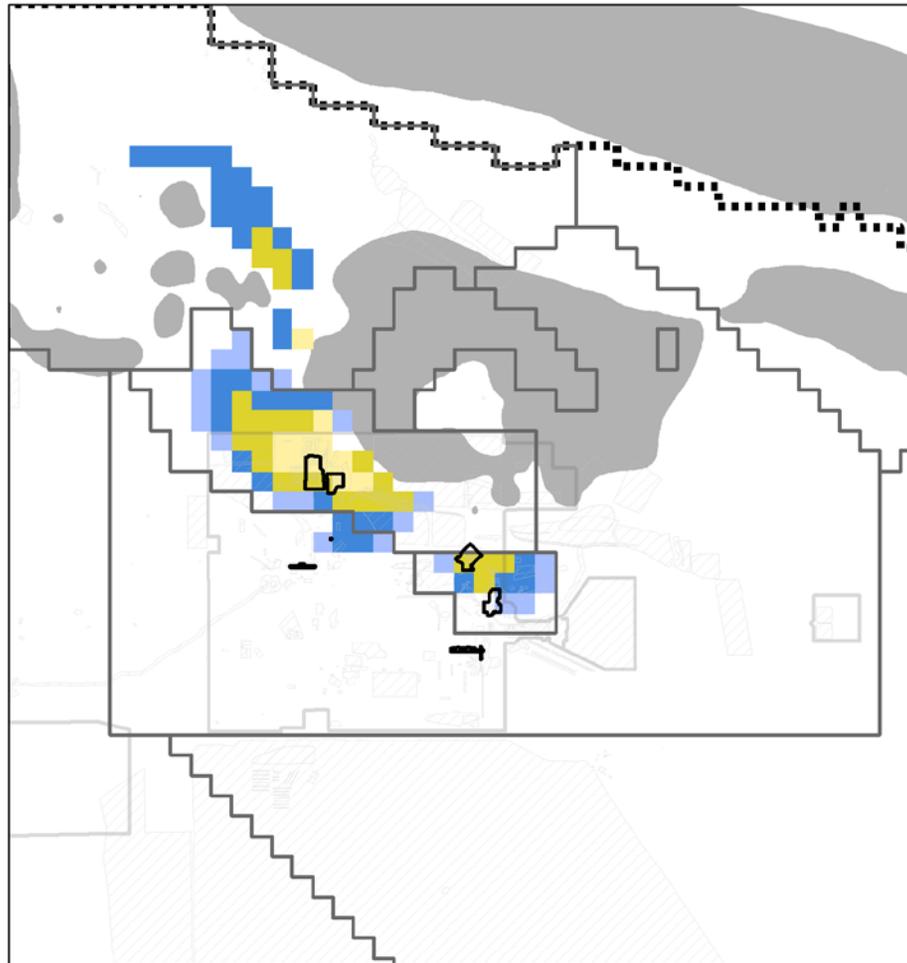
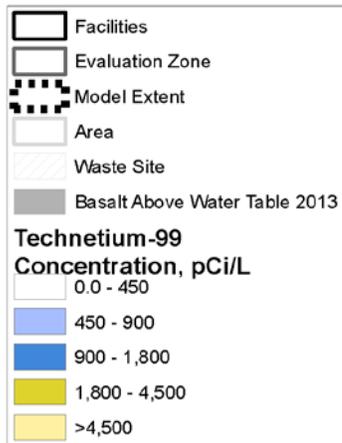
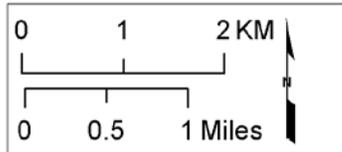
**0 Years
Technetium-99
No Action
Continuing Source**



P2R_FS_tc99_0.png (DoubleFigure_FS.mxd)

Figure B-29 - Plan view contours of the technetium-99 plume at simulation time 0 years based on the remedial evaluation case simulation with a continuing source term.

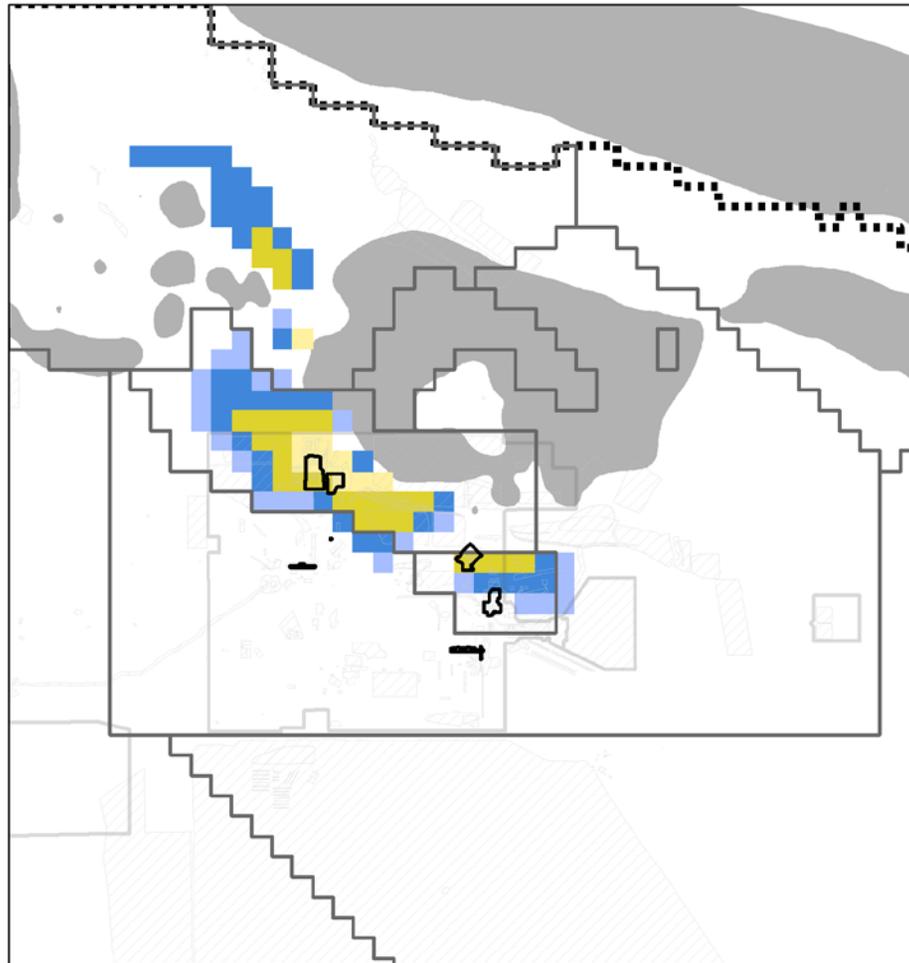
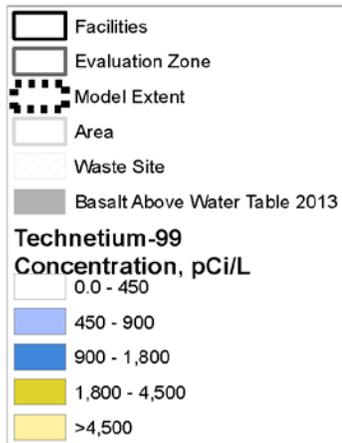
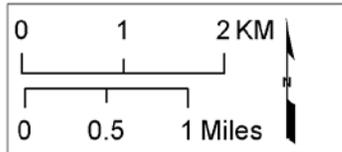
**1 Years
Technetium-99
No Action
Continuing Source**



P2R_FS_tc99_1.png (DoubleFigure_FS.mxd)

Figure B-30 - Plan view contours of the technetium-99 plume at simulation time 1 years based on the remedial evaluation case simulation with a continuing source term.

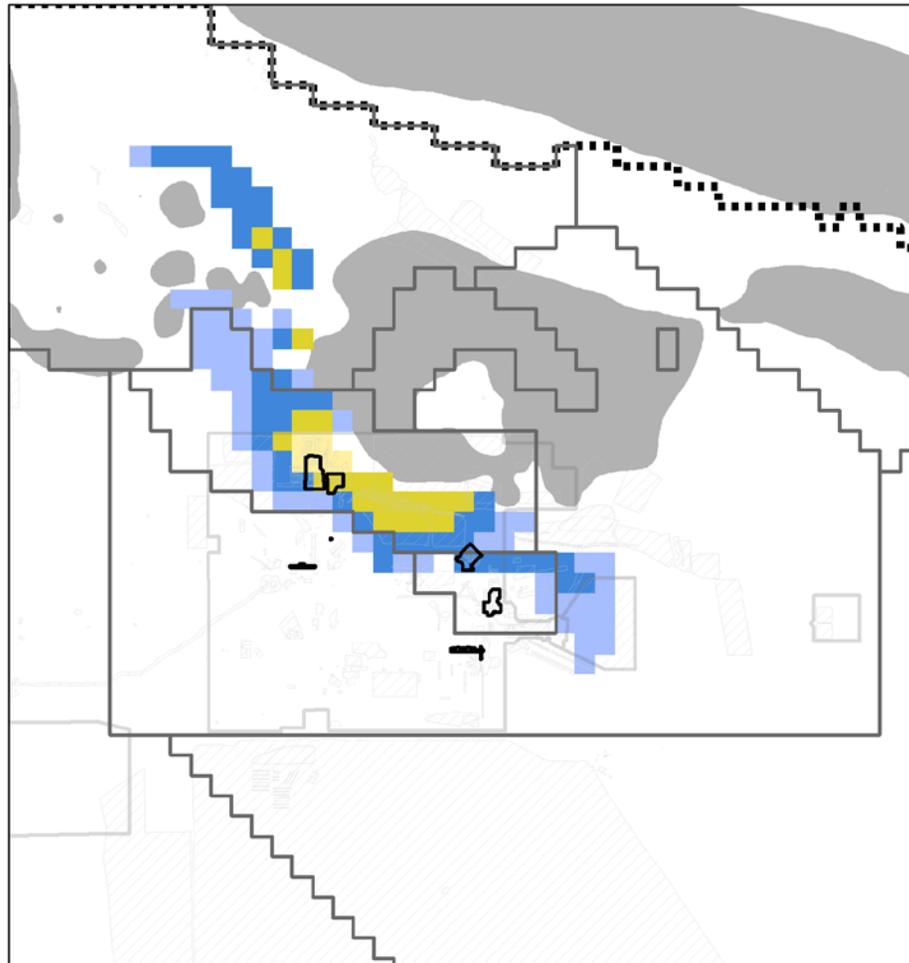
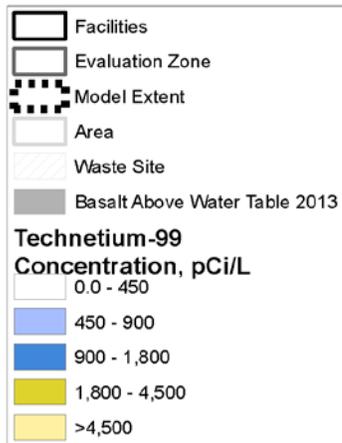
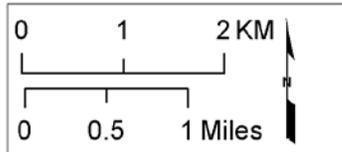
**2 Years
Technetium-99
No Action
Continuing Source**



P2R_FS_tc99_2.png (DoubleFigure_FS.mxd)

Figure B-31 - Plan view contours of the technetium-99 plume at simulation time 2 years based on the remedial evaluation case simulation with a continuing source term.

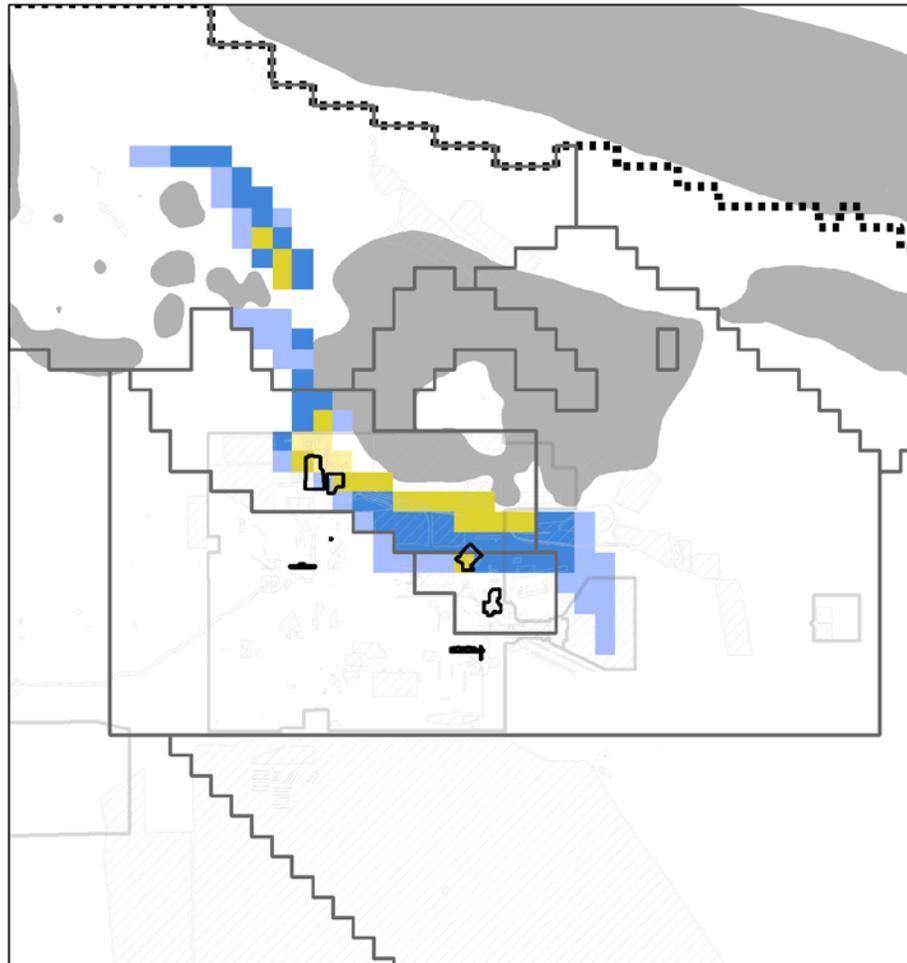
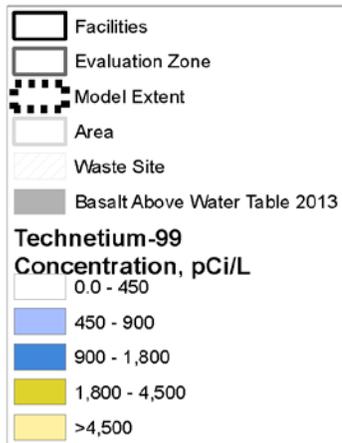
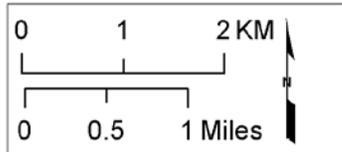
**5 Years
Technetium-99
No Action
Continuing Source**



P2R_FS_tc99_5.png (DoubleFigure_FS.mxd)

Figure B-32 - Plan view contours of the technetium-99 plume at simulation time 5 years based on the remedial evaluation case simulation with a continuing source term.

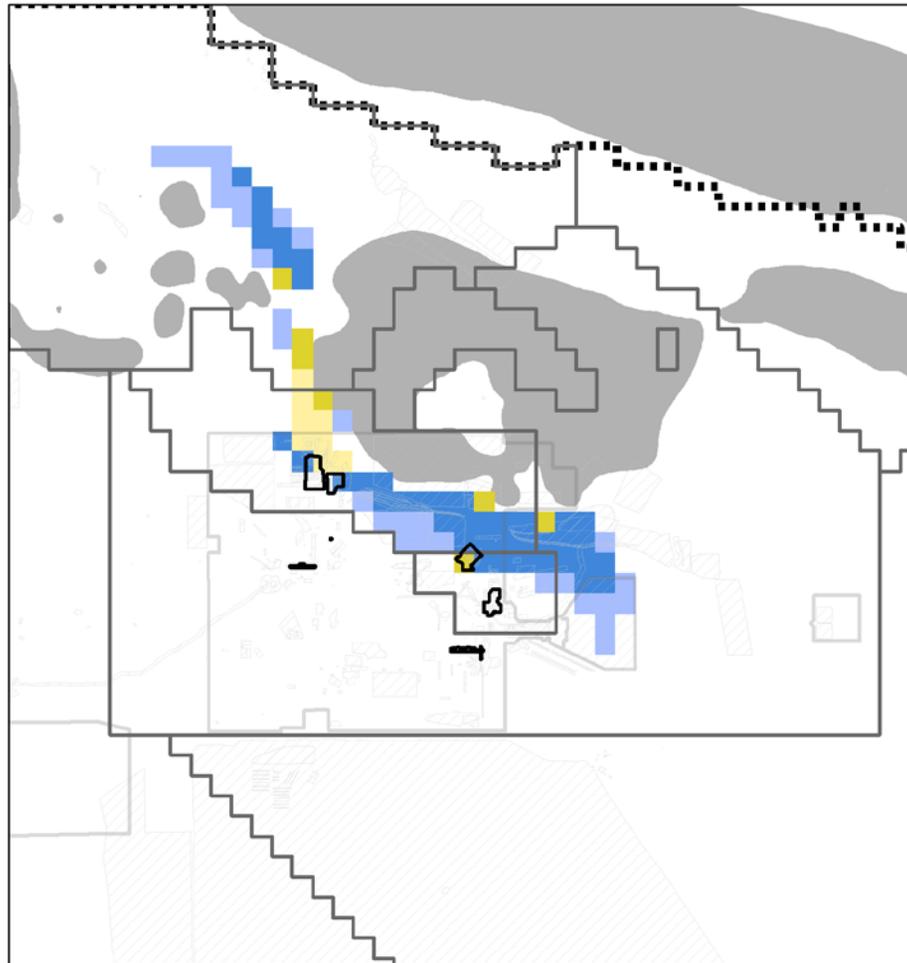
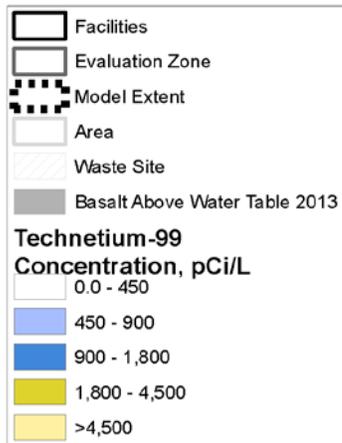
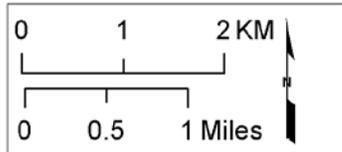
**10 Years
Technetium-99
No Action
Continuing Source**



P2R_FS_tc99_10.png (DoubleFigure_FS.mxd)

Figure B-33 - Plan view contours of the technetium-99 plume at simulation time 10 years based on the remedial evaluation case simulation with a continuing source term.

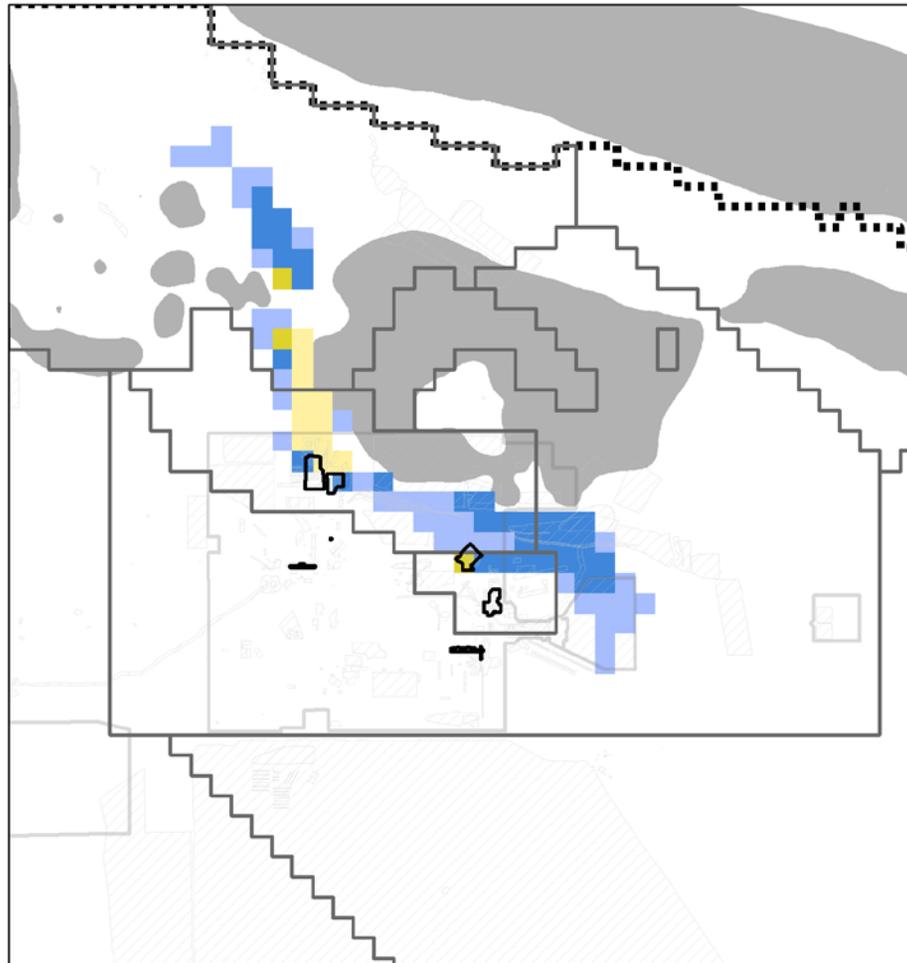
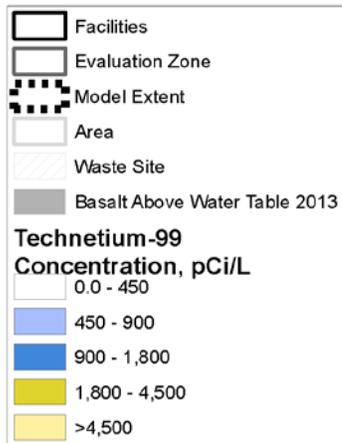
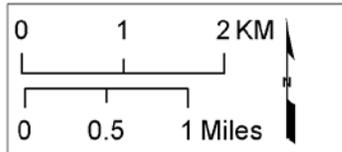
**15 Years
Technetium-99
No Action
Continuing Source**



P2R_FS_tc99_15.png (DoubleFigure_FS.mxd)

Figure B-34 - Plan view contours of the technetium-99 plume at simulation time 15 years based on the remedial evaluation case simulation with a continuing source term.

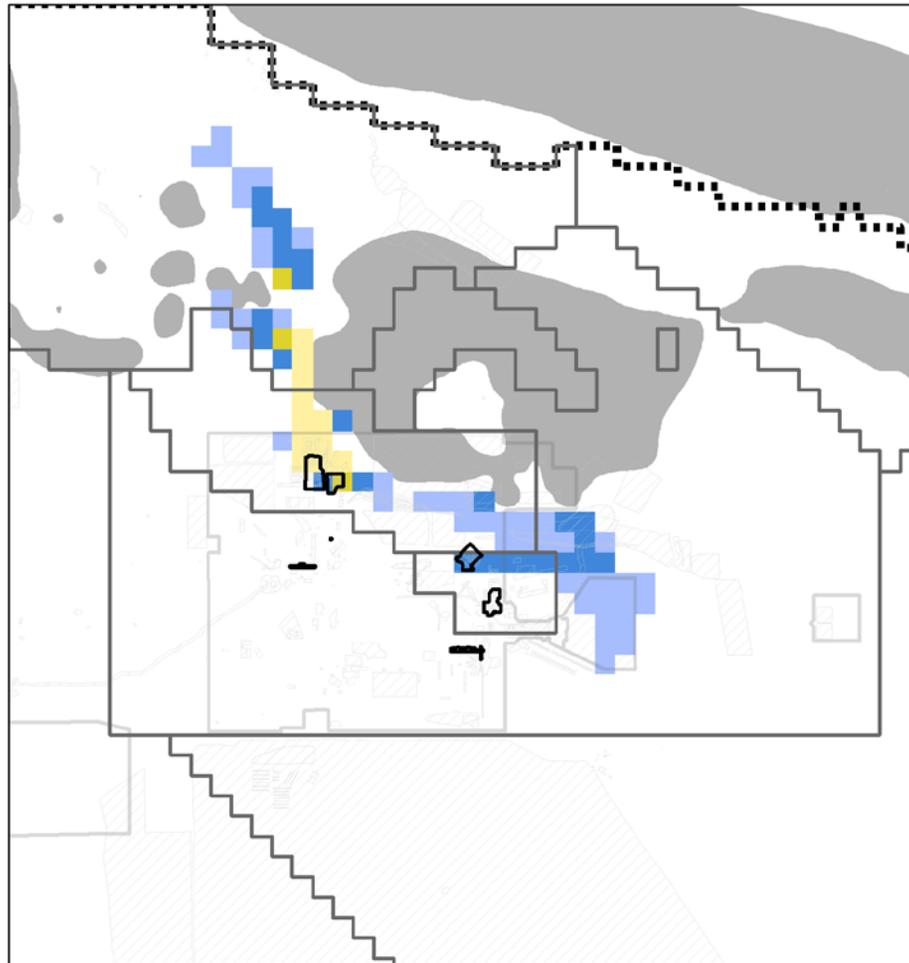
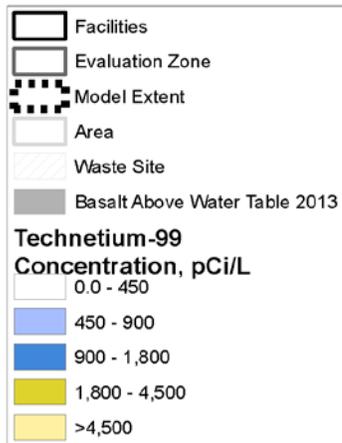
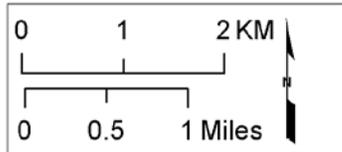
**20 Years
Technetium-99
No Action
Continuing Source**



P2R_FS_tc99_20.png (DoubleFigure_FS.mxd)

Figure B-35 - Plan view contours of the technetium-99 plume at simulation time 20 years based on the remedial evaluation case simulation with a continuing source term.

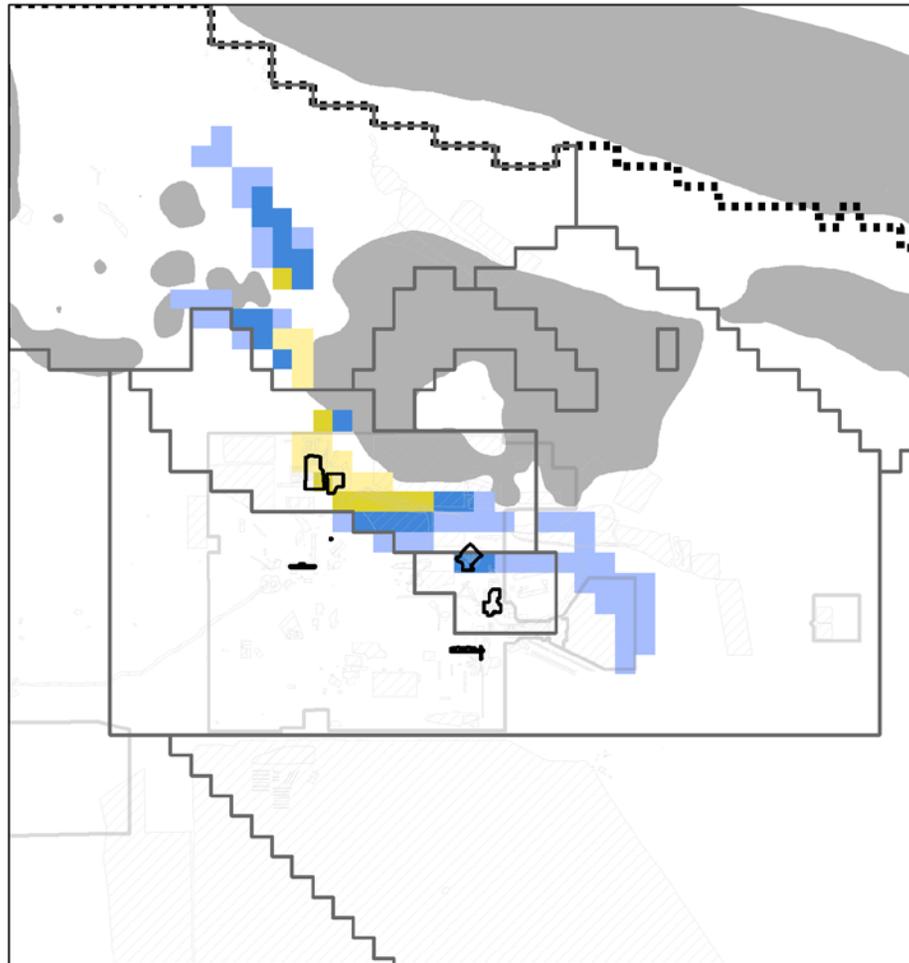
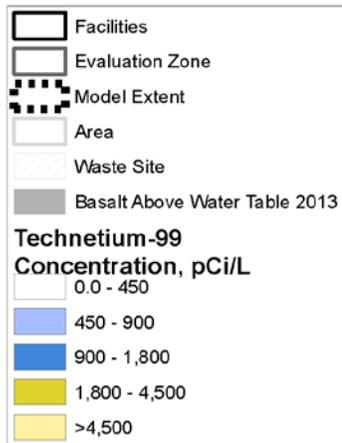
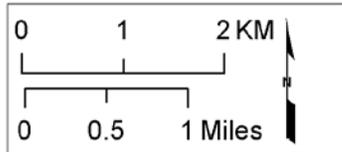
**25 Years
Technetium-99
No Action
Continuing Source**



P2R_FS_tc99_25.png (DoubleFigure_FS.mxd)

Figure B-36 - Plan view contours of the technetium-99 plume at simulation time 25 years based on the remedial evaluation case simulation with a continuing source term.

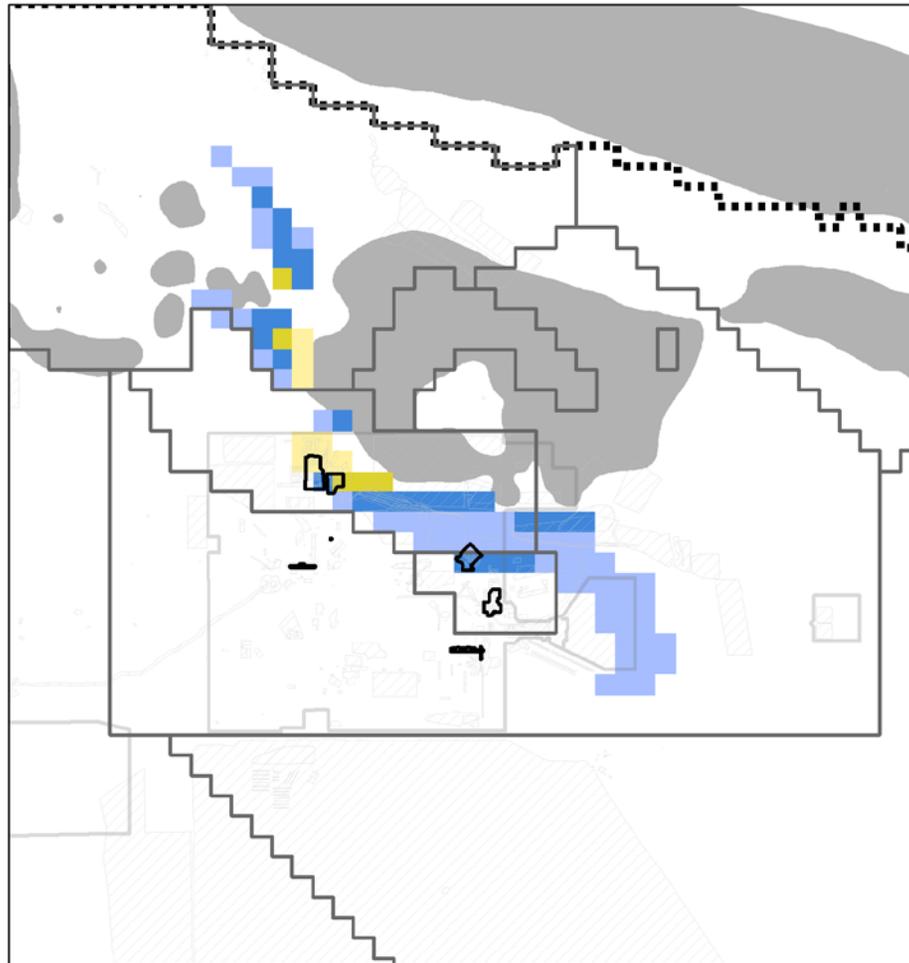
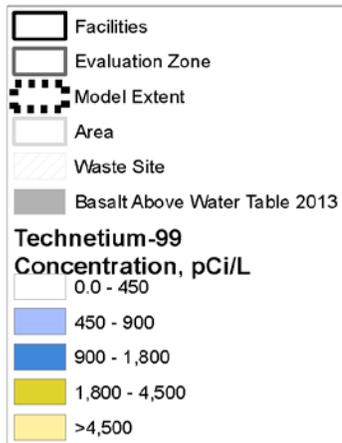
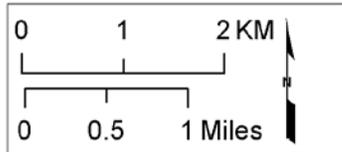
**30 Years
Technetium-99
No Action
Continuing Source**



P2R_FS_tc99_30.png (DoubleFigure_FS.mxd)

Figure B-37 - Plan view contours of the technetium-99 plume at simulation time 30 years based on the remedial evaluation case simulation with a continuing source term.

**50 Years
Technetium-99
No Action
Continuing Source**



P2R_FS_tc99_50.png (DoubleFigure_FS.mxd)

Figure B-38 - Plan view contours of the technetium-99 plume at simulation time 50 years based on the remedial evaluation case simulation with a continuing source term.

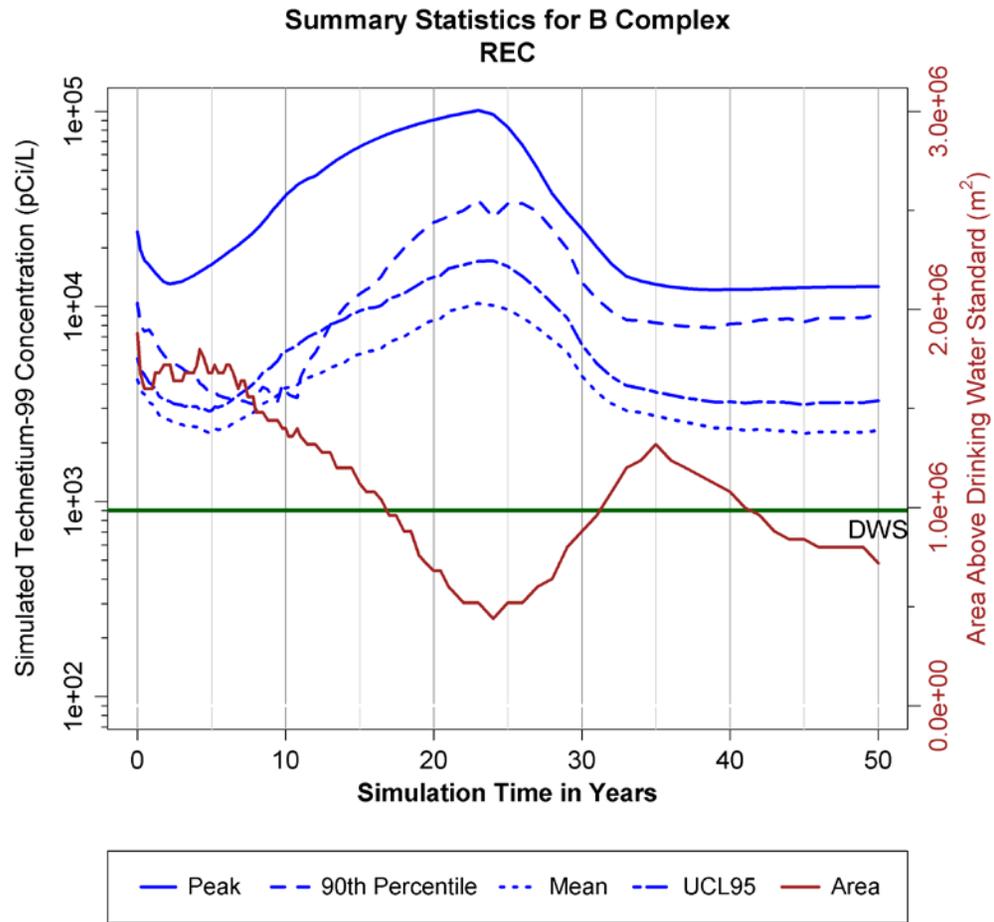


Figure B-39 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the remedial evaluation case simulation with a continuing source term.

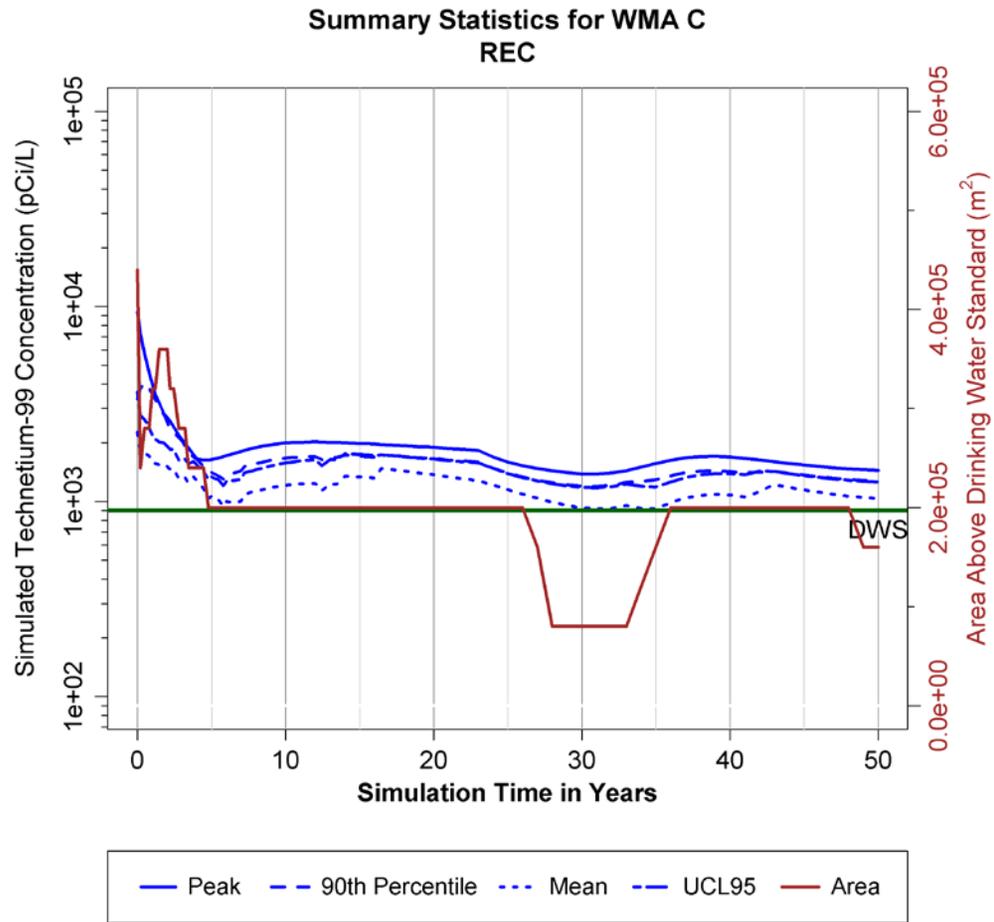


Figure B-40 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the remedial evaluation case simulation with a continuing source term.

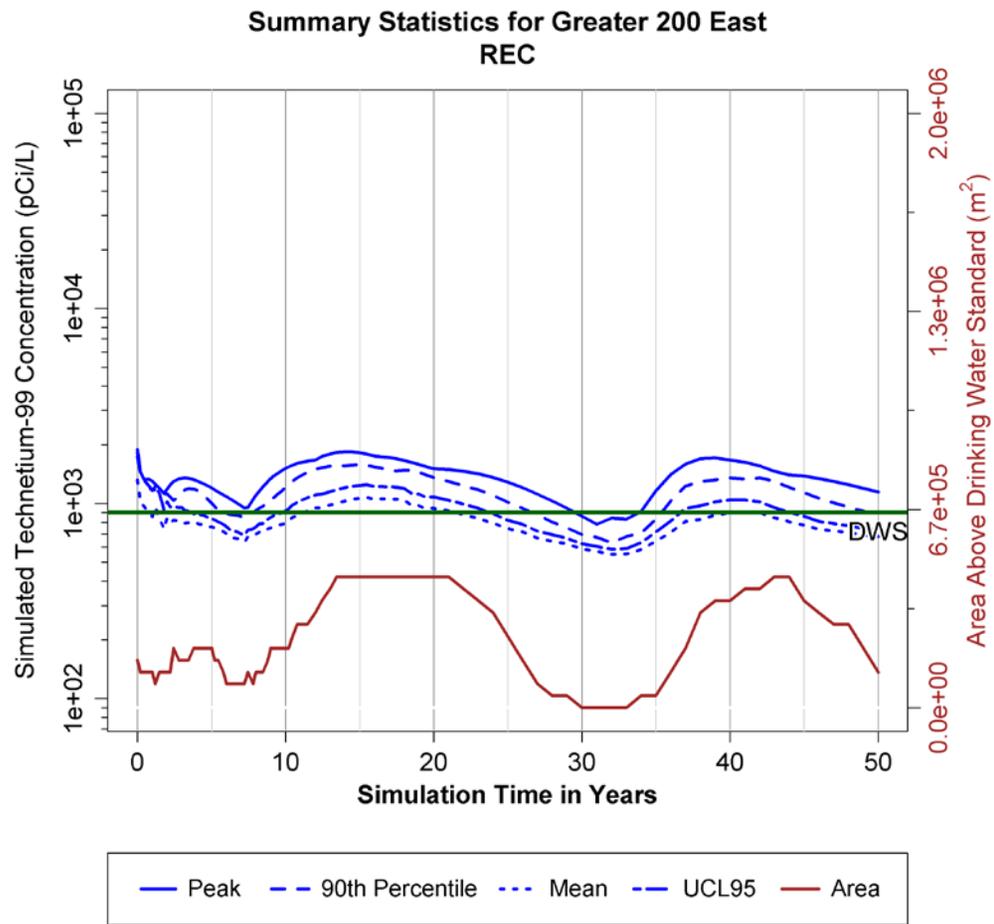


Figure B-41 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the remedial evaluation case simulation with a continuing source term.

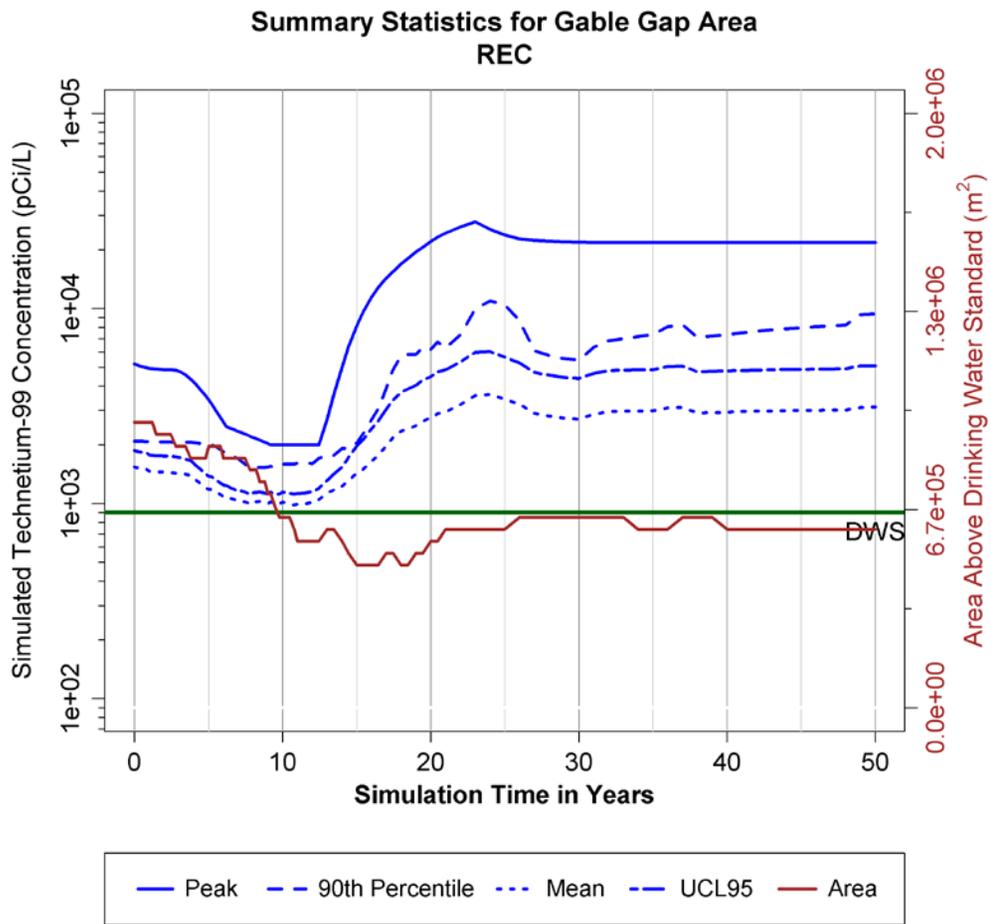
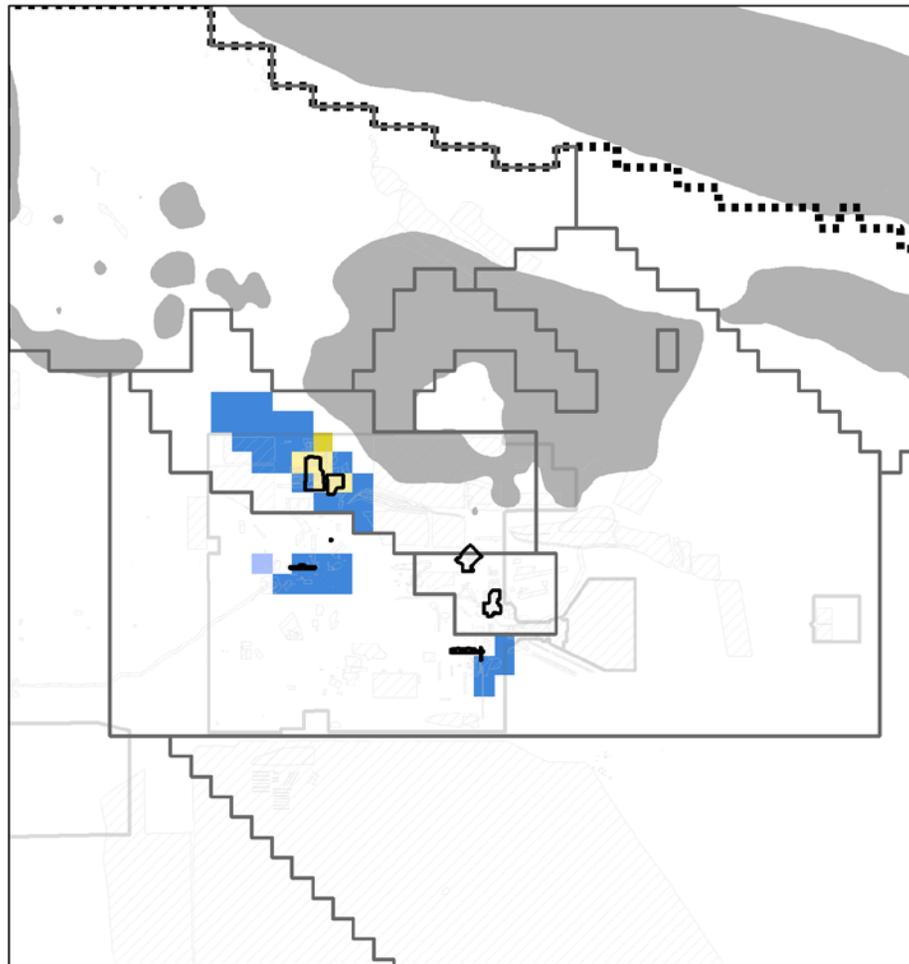
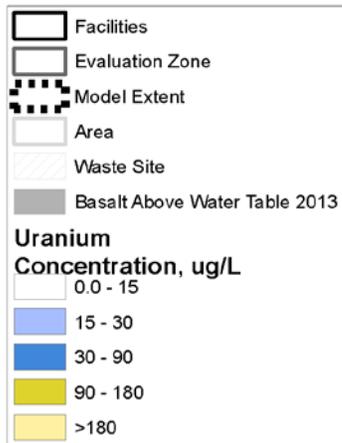
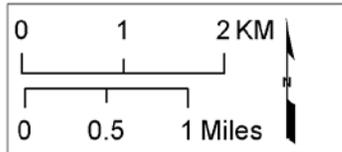


Figure B-42 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the remedial evaluation case simulation with a continuing source term.

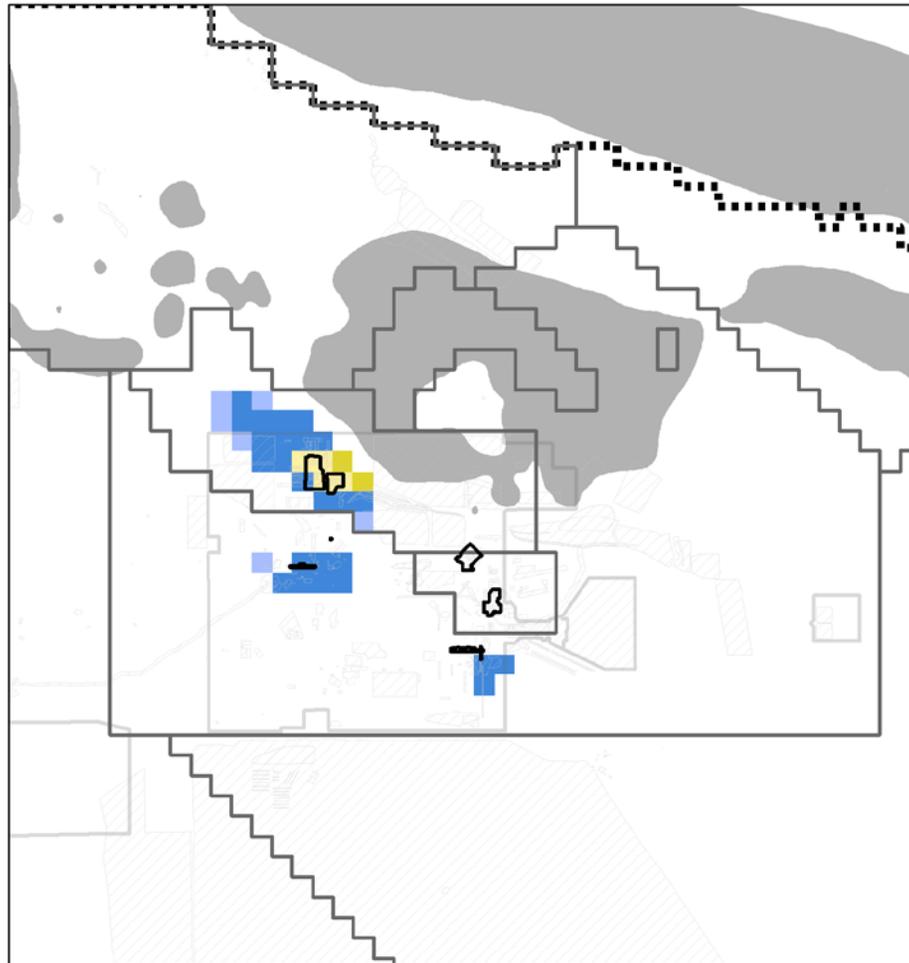
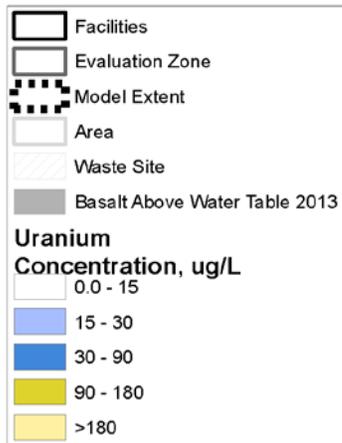
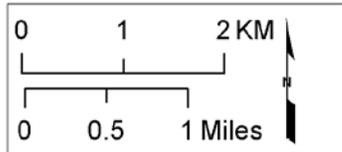
**0 Years
Uranium
No Action
Continuing Source**



P2R_FS_u238_0.png (DoubleFigure_FS.mxd)

Figure B-43 - Plan view contours of the uranium plume at simulation time 0 years based on the remedial evaluation case simulation with a continuing source term.

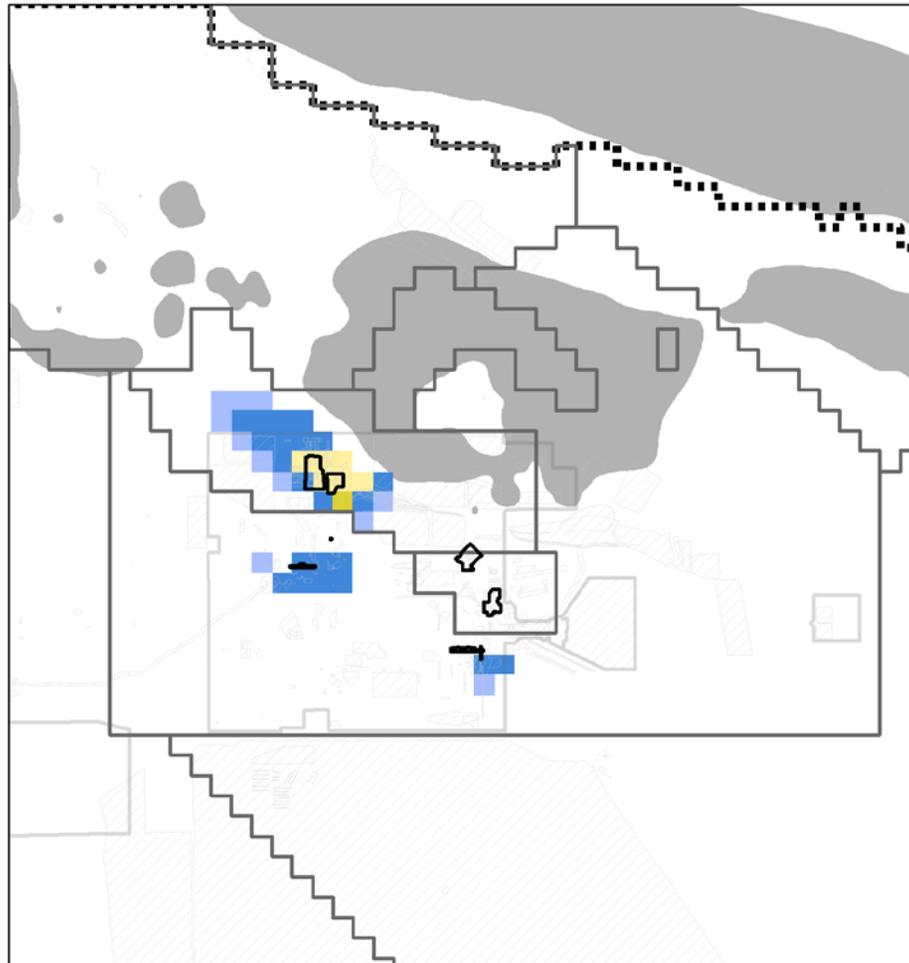
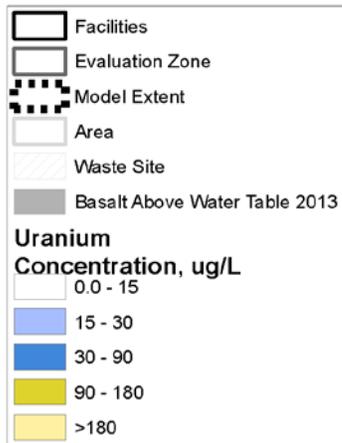
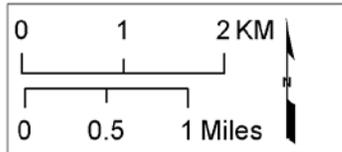
**1 Years
Uranium
No Action
Continuing Source**



P2R_FS_u238_1.png (DoubleFigure_FS.mxd)

Figure B-44 - Plan view contours of the uranium plume at simulation time 1 years based on the remedial evaluation case simulation with a continuing source term.

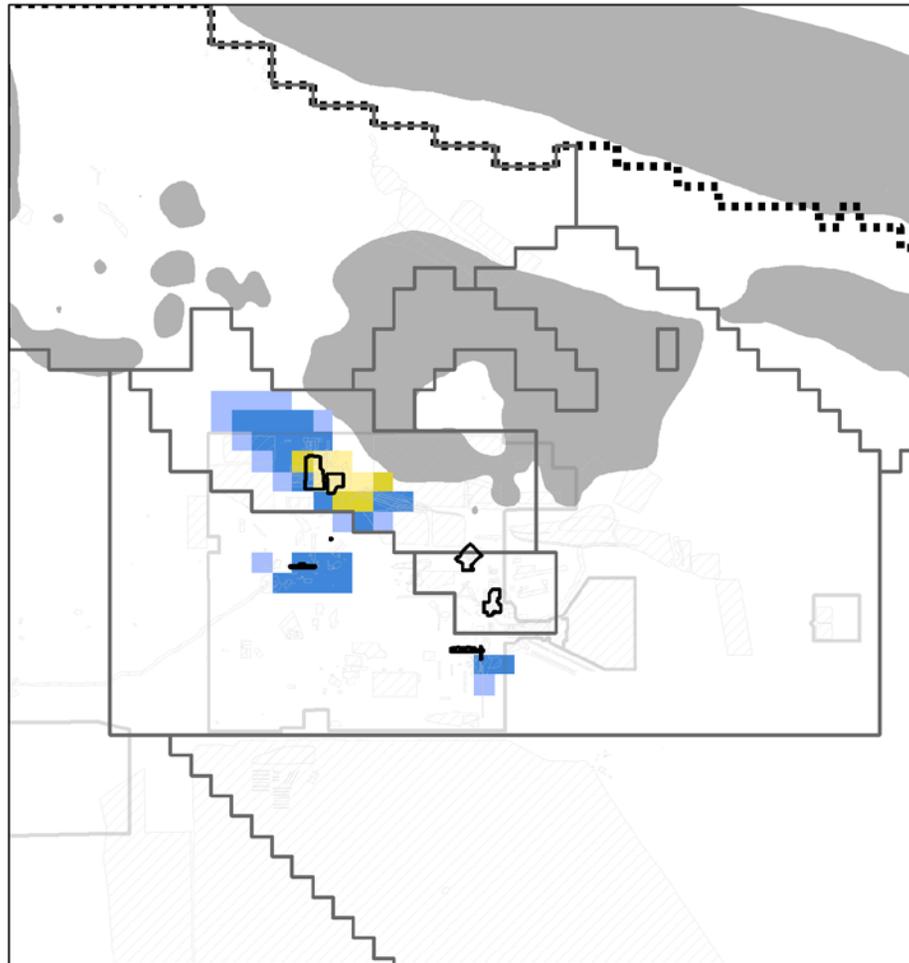
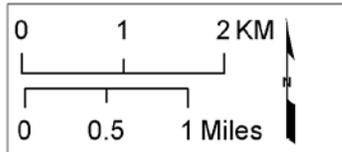
**2 Years
Uranium
No Action
Continuing Source**



P2R_FS_u238_2.png (DoubleFigure_FS.mxd)

Figure B-45 - Plan view contours of the uranium plume at simulation time 2 years based on the remedial evaluation case simulation with a continuing source term.

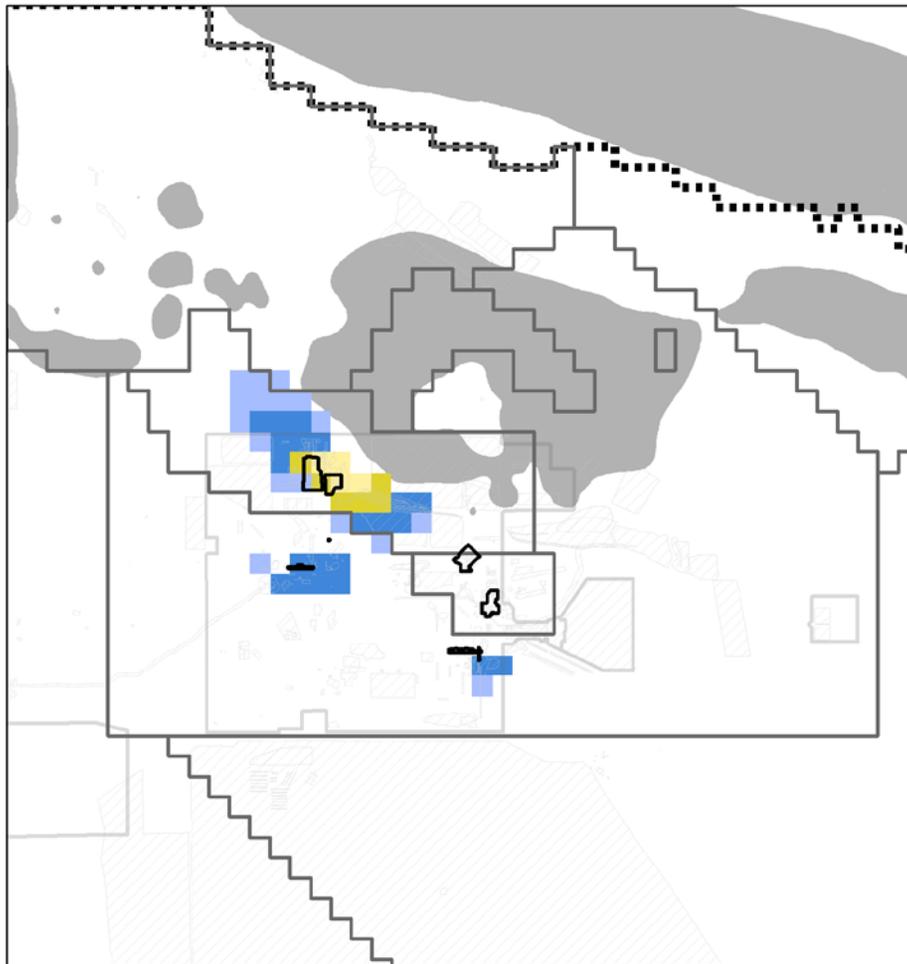
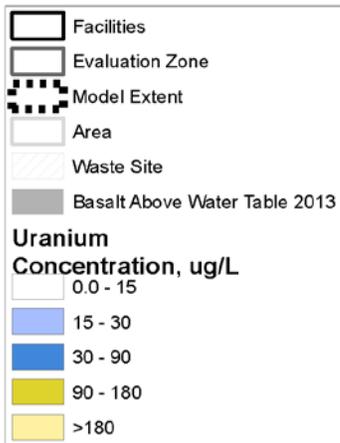
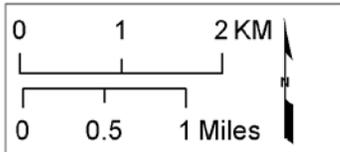
**5 Years
Uranium
No Action
Continuing Source**



P2R_FS_u238_5.png (DoubleFigure_FS.mxd)

Figure B-46 - Plan view contours of the uranium plume at simulation time 5 years based on the remedial evaluation case simulation with a continuing source term.

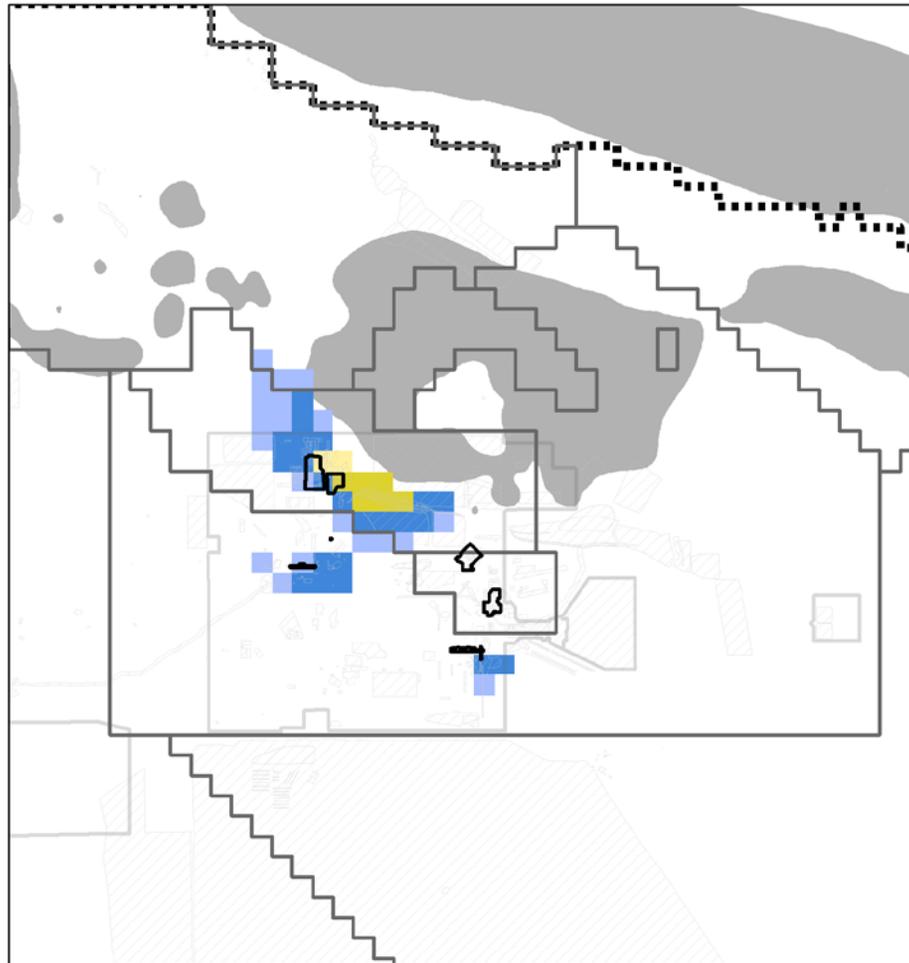
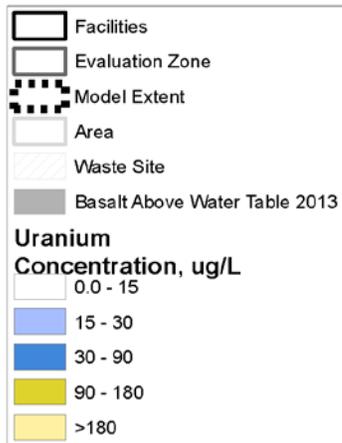
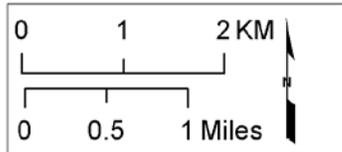
**10 Years
Uranium
No Action
Continuing Source**



P2R_FS_u238_10.png (DoubleFigure_FS.mxd)

Figure B-47 - Plan view contours of the uranium plume at simulation time 10 years based on the remedial evaluation case simulation with a continuing source term.

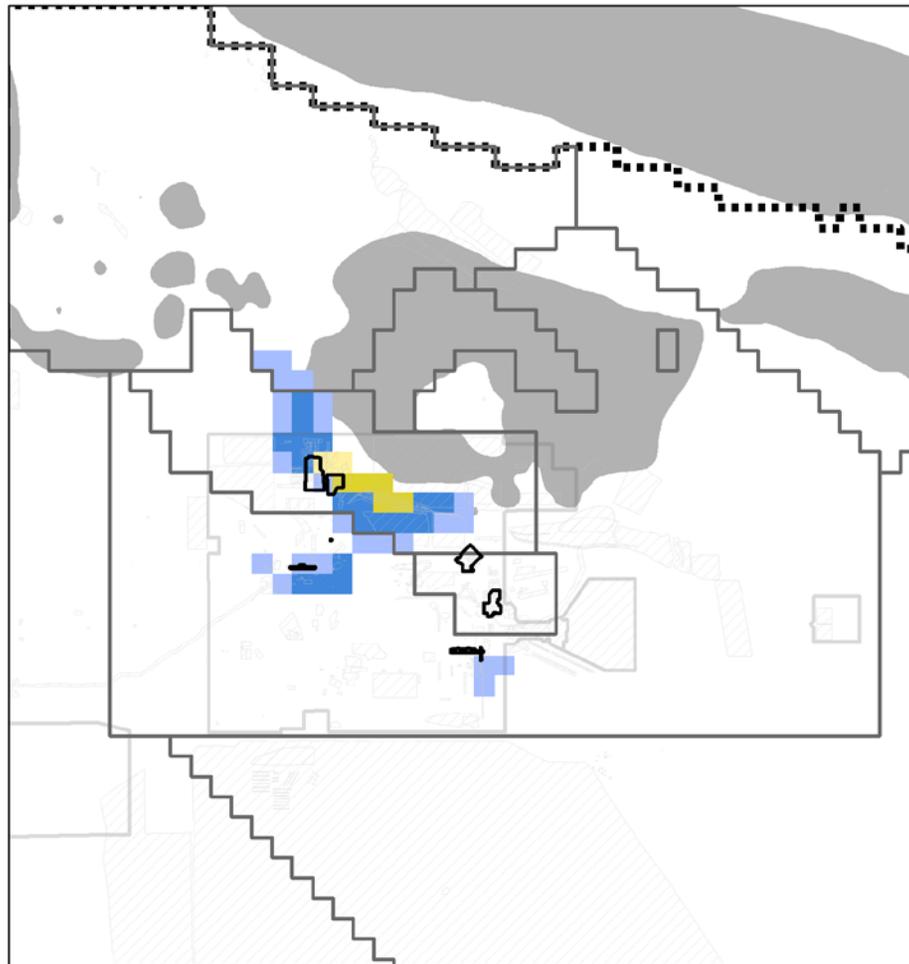
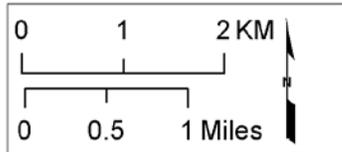
**15 Years
Uranium
No Action
Continuing Source**



P2R_FS_u238_15.png (DoubleFigure_FS.mxd)

Figure B-48 - Plan view contours of the uranium plume at simulation time 15 years based on the remedial evaluation case simulation with a continuing source term.

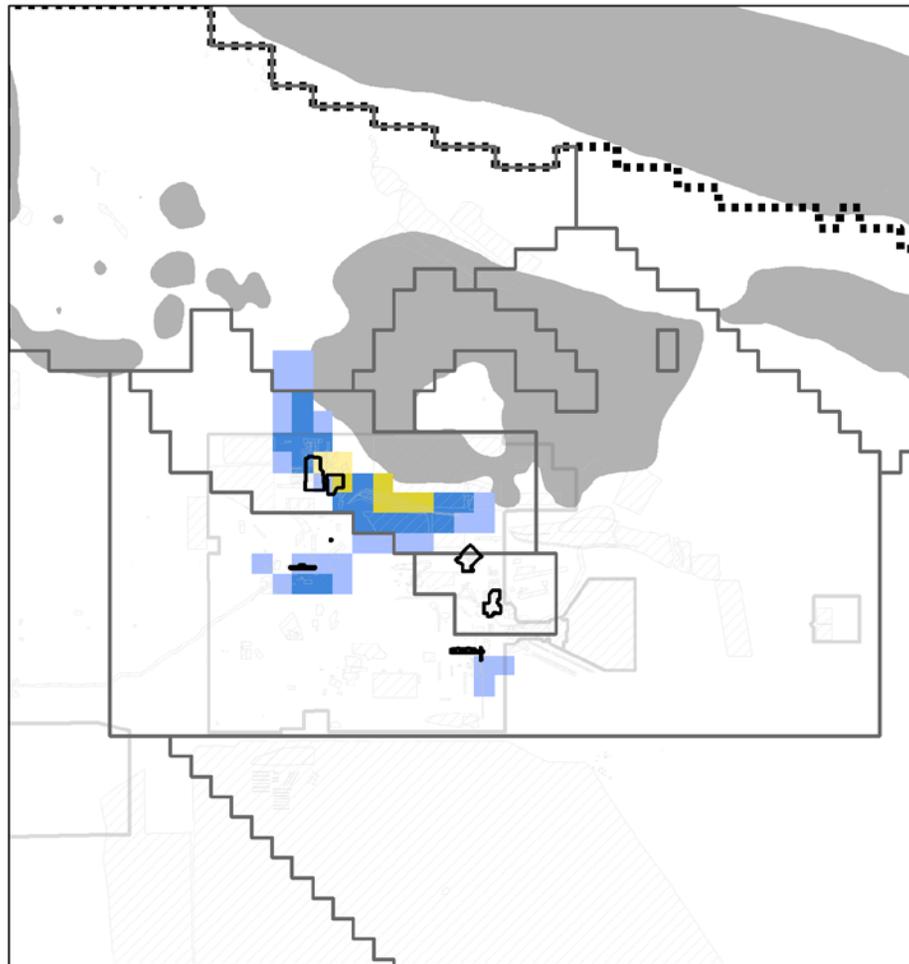
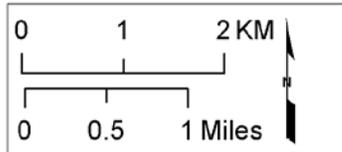
**20 Years
Uranium
No Action
Continuing Source**



P2R_FS_u238_20.png (DoubleFigure_FS.mxd)

Figure B-49 - Plan view contours of the uranium plume at simulation time 20 years based on the remedial evaluation case simulation with a continuing source term.

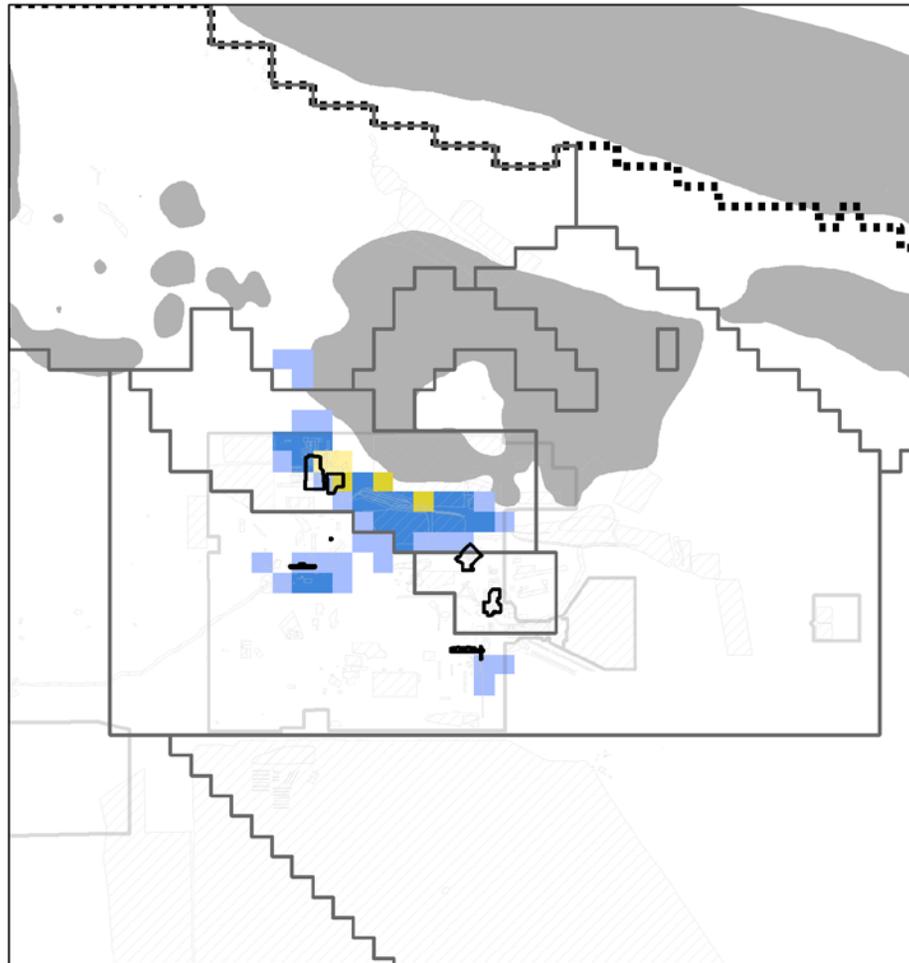
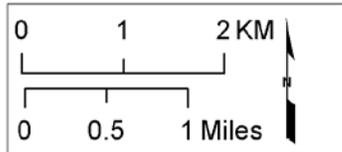
**25 Years
Uranium
No Action
Continuing Source**



P2R_FS_u238_25.png (DoubleFigure_FS.mxd)

Figure B-50 - Plan view contours of the uranium plume at simulation time 25 years based on the remedial evaluation case simulation with a continuing source term.

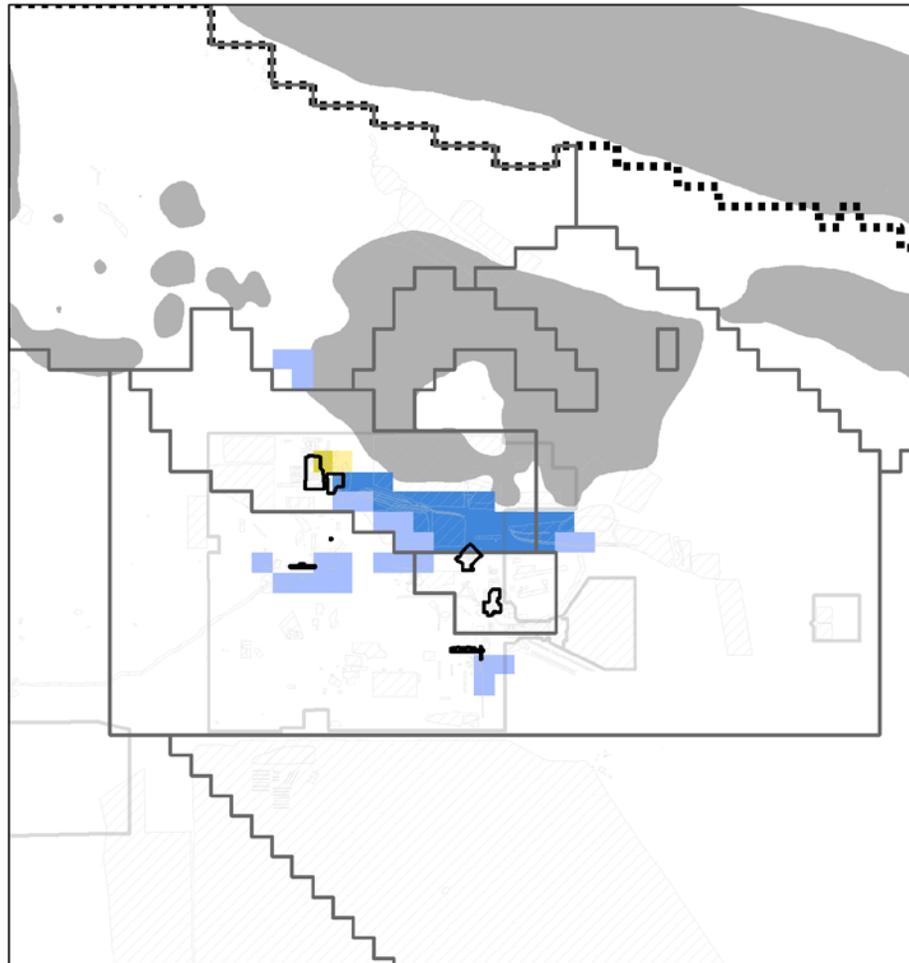
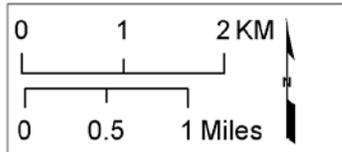
**30 Years
Uranium
No Action
Continuing Source**



P2R_FS_u238_30.png (DoubleFigure_FS.mxd)

Figure B-51 - Plan view contours of the uranium plume at simulation time 30 years based on the remedial evaluation case simulation with a continuing source term.

**50 Years
Uranium
No Action
Continuing Source**



P2R_FS_u238_50.png (DoubleFigure_FS.mxd)

Figure B-52 - Plan view contours of the uranium plume at simulation time 50 years based on the remedial evaluation case simulation with a continuing source term.

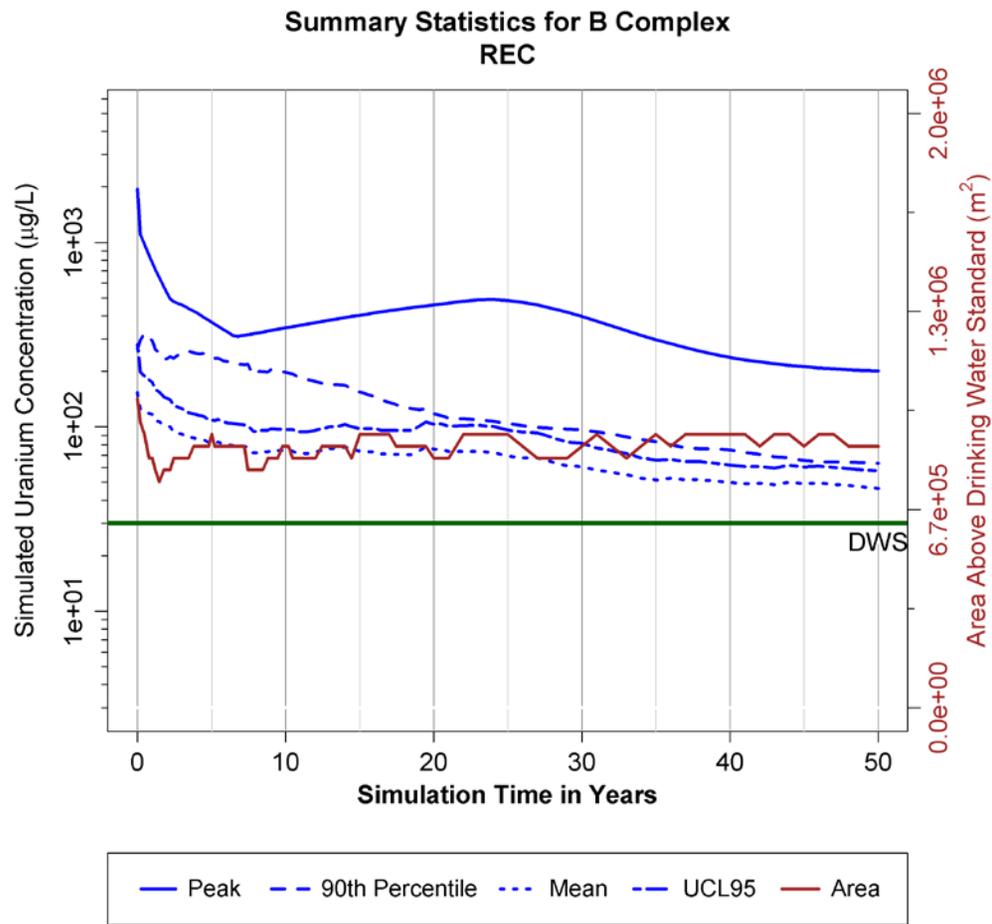


Figure B-53 - Statistical summary of simulated concentration within the model domain for the uranium plume for the remedial evaluation case simulation with a continuing source term.

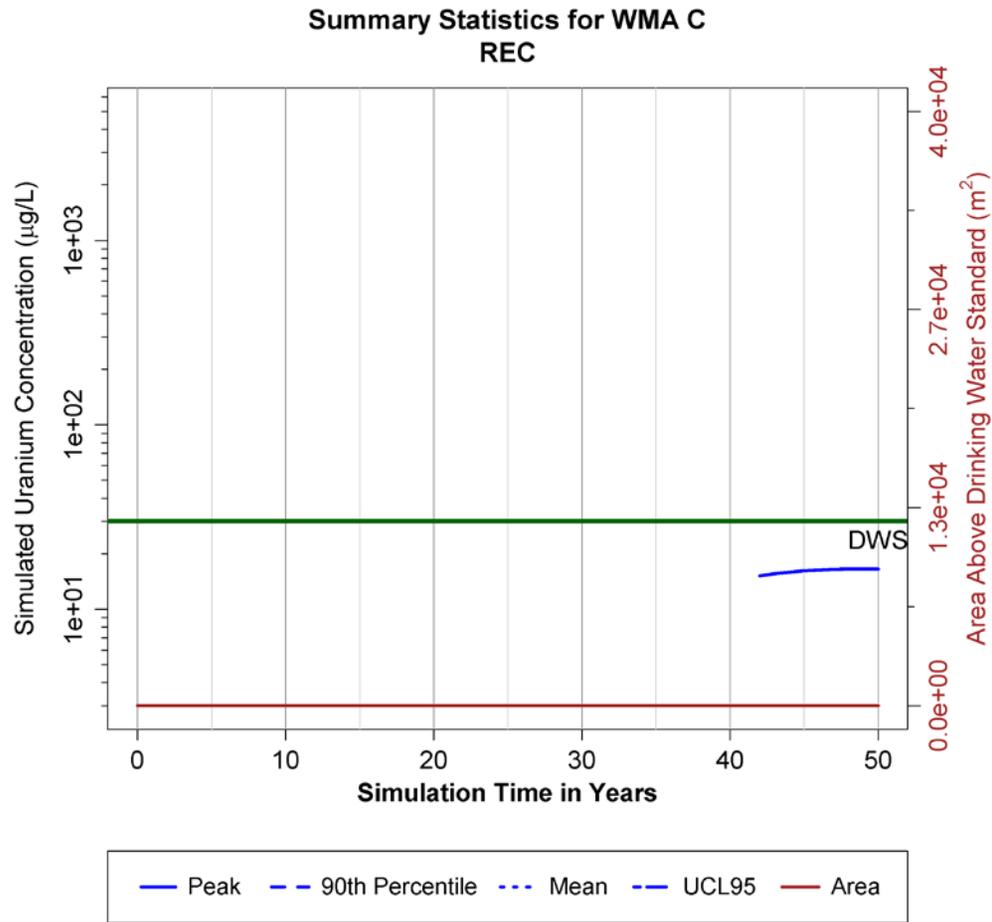


Figure B-54 - Statistical summary of simulated concentration within the model domain for the uranium plume for the remedial evaluation case simulation with a continuing source term.

Summary Statistics for Greater 200 East
REC

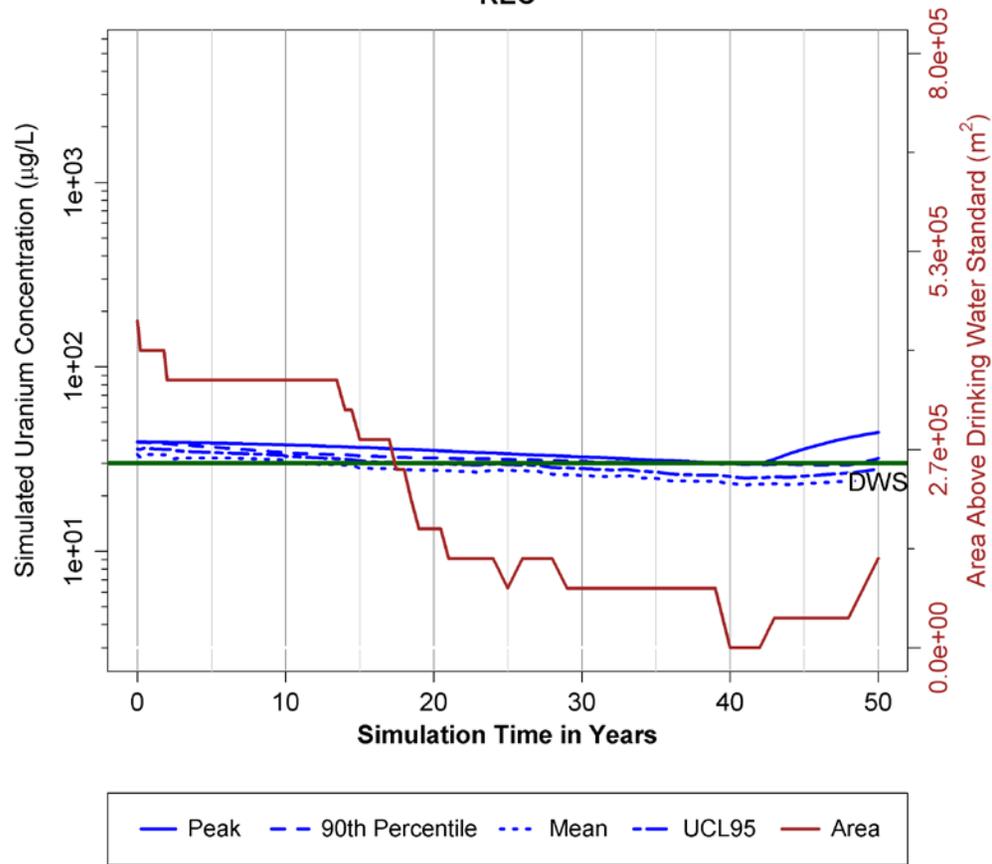


Figure B-55 - Statistical summary of simulated concentration within the model domain for the uranium plume for the remedial evaluation case simulation with a continuing source term.

Summary Statistics for Gable Gap Area
REC

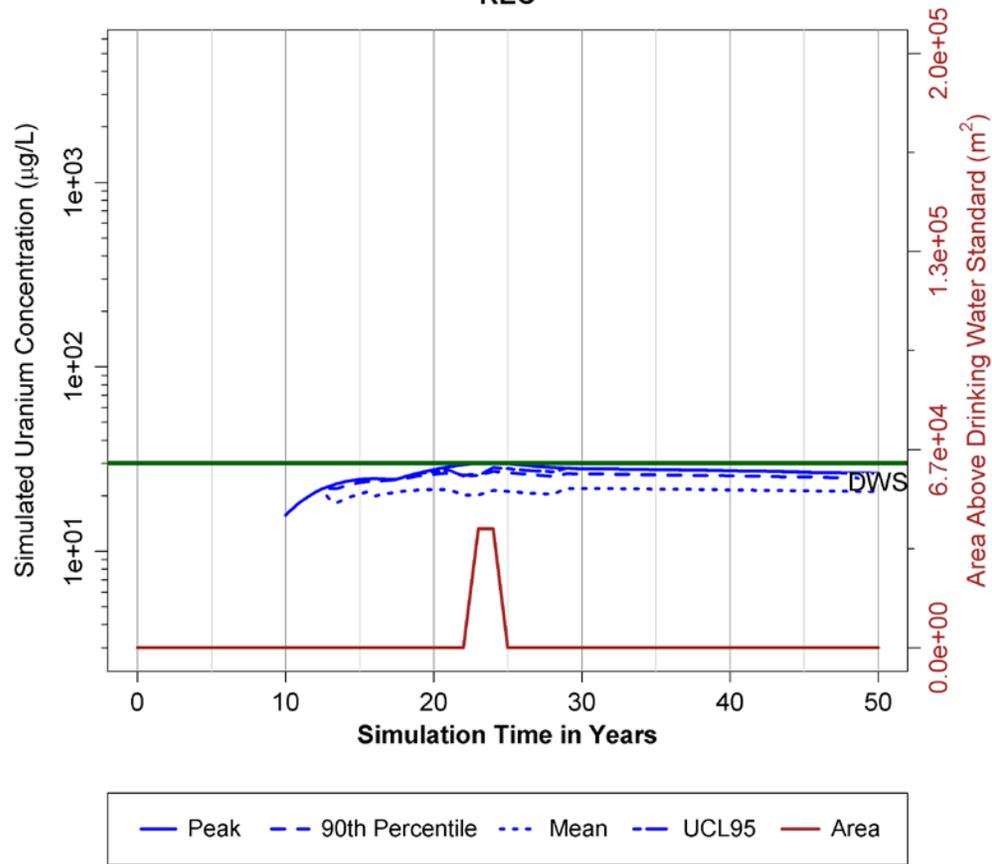
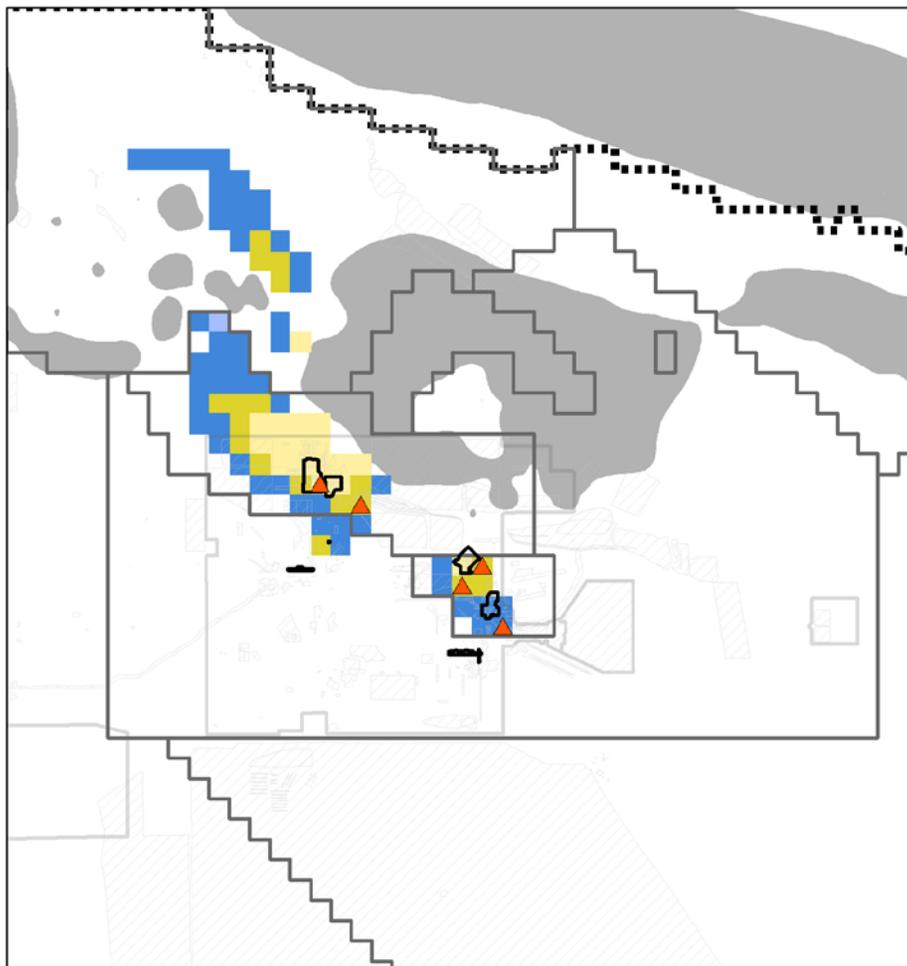
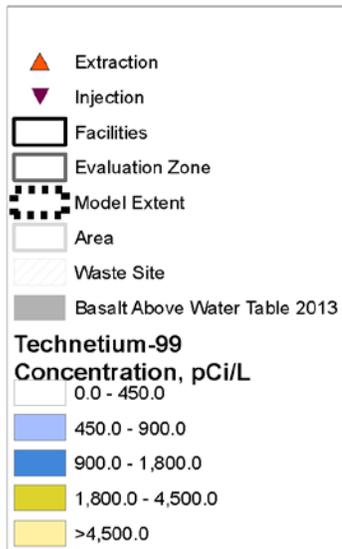
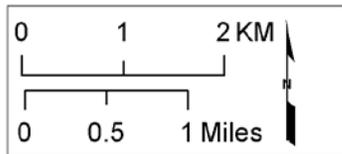


Figure B-56 - Statistical summary of simulated concentration within the model domain for the uranium plume for the remedial evaluation case simulation with a continuing source term.

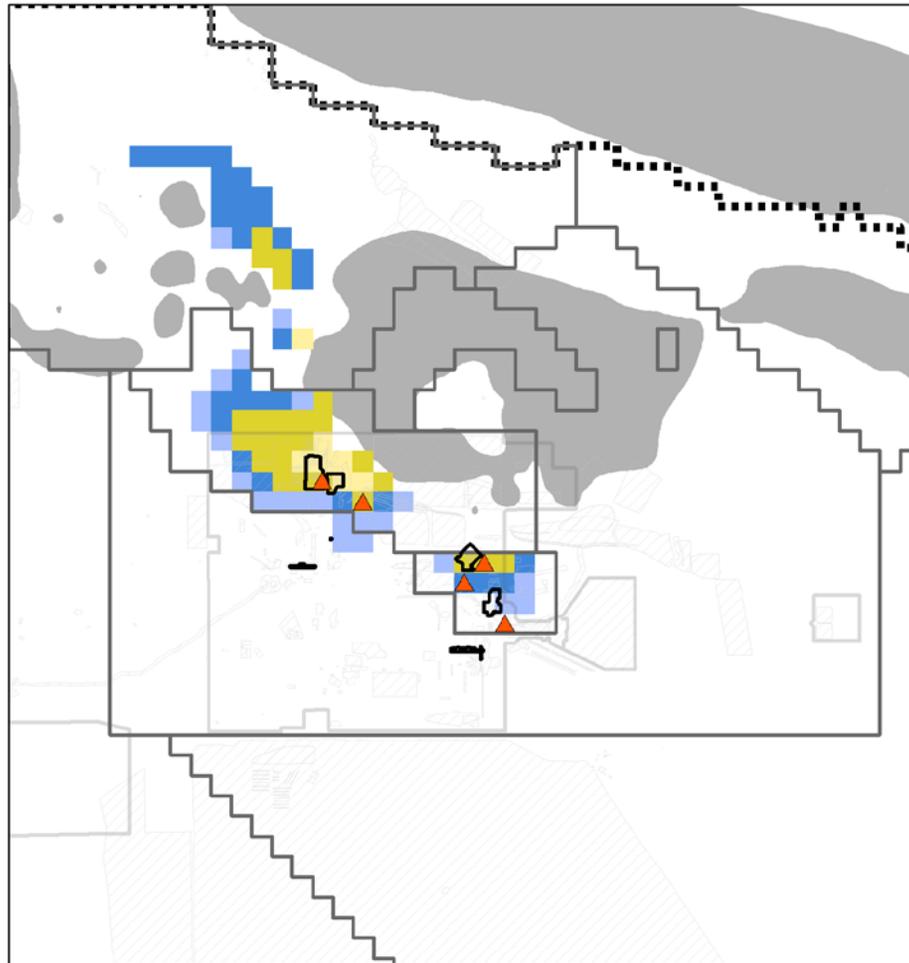
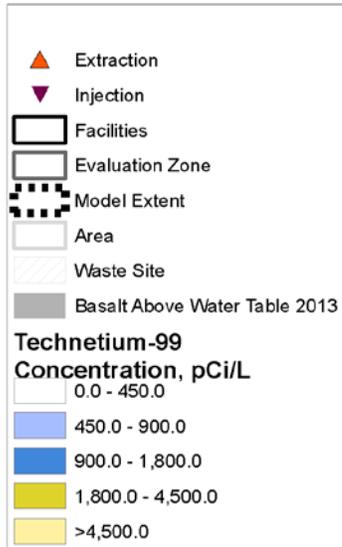
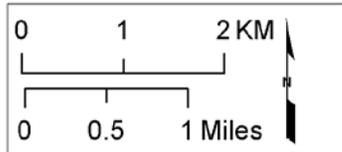
**0 Years
Technetium-99
Scenario 2**



P2R_FS_tc99_0.png (DoubleFigure_FS.mxd)

Figure B-57 - Plan view contours of the technetium-99 plume at simulation time 0 years based on the scenario 2 simulation.

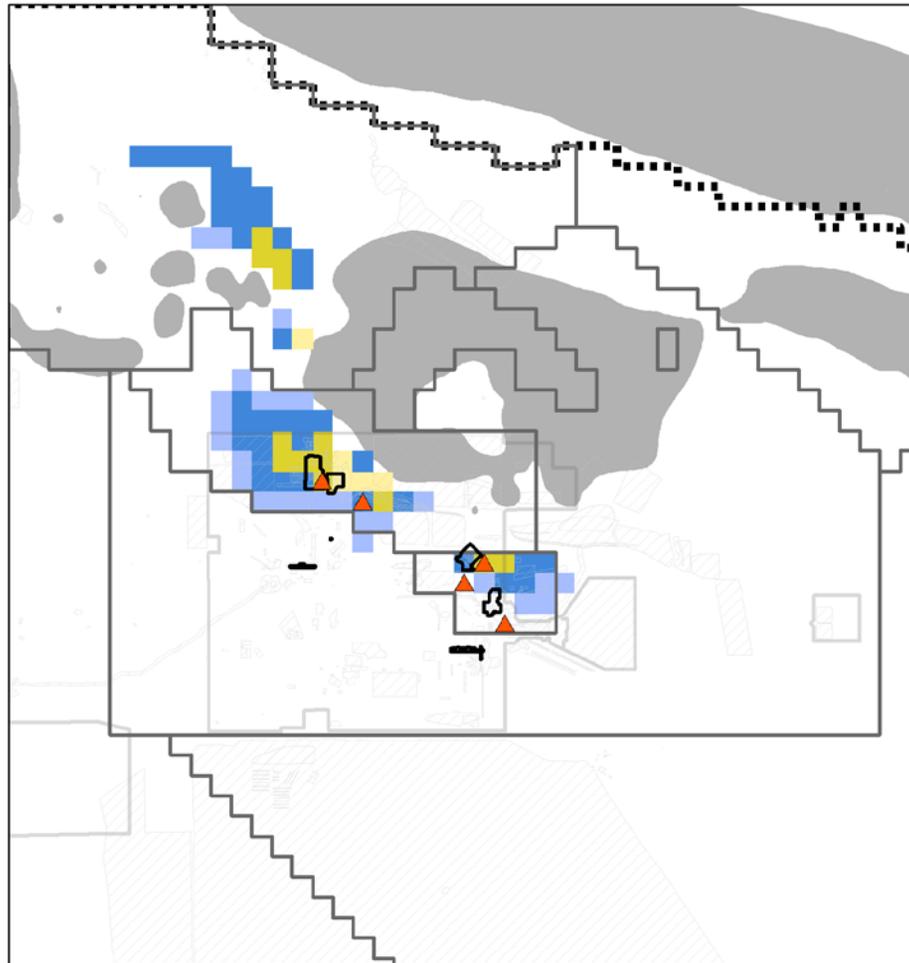
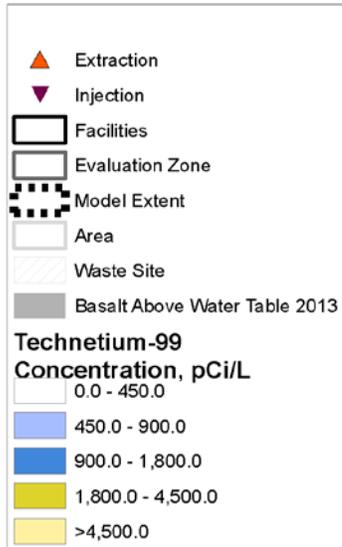
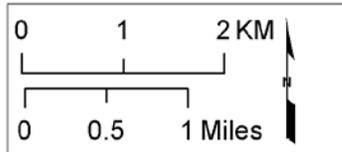
**1 Years
Technetium-99
Scenario 2**



P2R_FS_tc99_1.png (DoubleFigure_FS.mxd)

Figure B-58 - Plan view contours of the technetium-99 plume at simulation time 1 years based on the scenario 2 simulation.

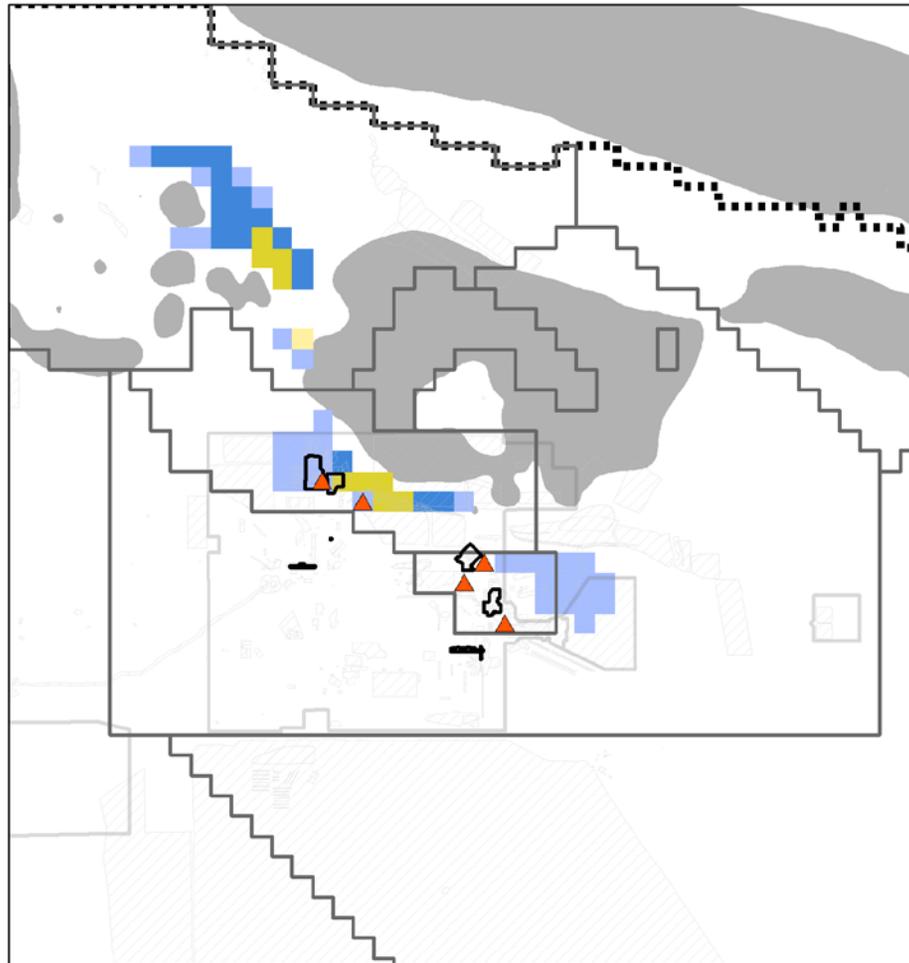
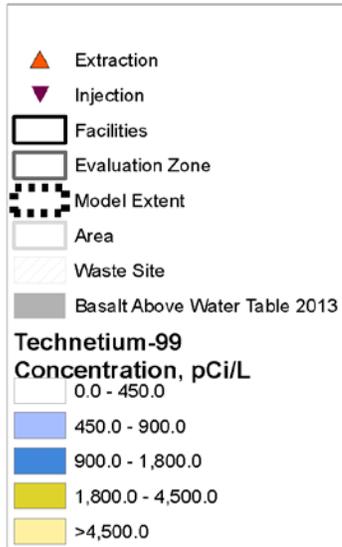
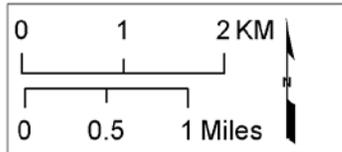
**2 Years
Technetium-99
Scenario 2**



P2R_FS_tc99_2.png (DoubleFigure_FS.mxd)

Figure B-59 - Plan view contours of the technetium-99 plume at simulation time 2 years based on the scenario 2 simulation.

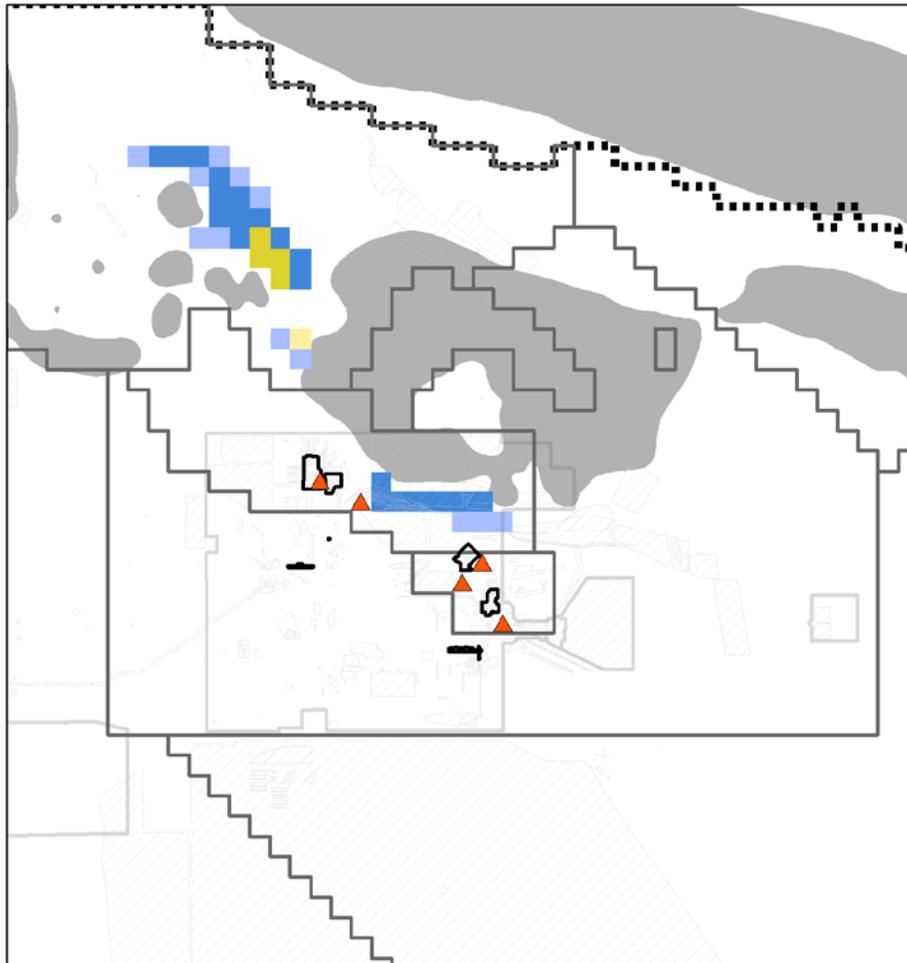
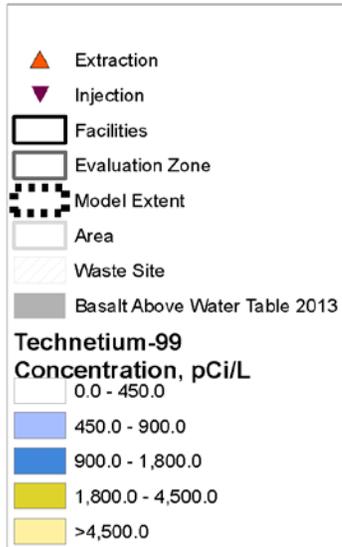
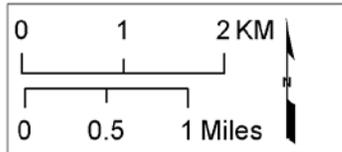
**5 Years
Technetium-99
Scenario 2**



P2R_FS_tc99_5.png (DoubleFigure_FS.mxd)

Figure B-60 - Plan view contours of the technetium-99 plume at simulation time 5 years based on the scenario 2 simulation.

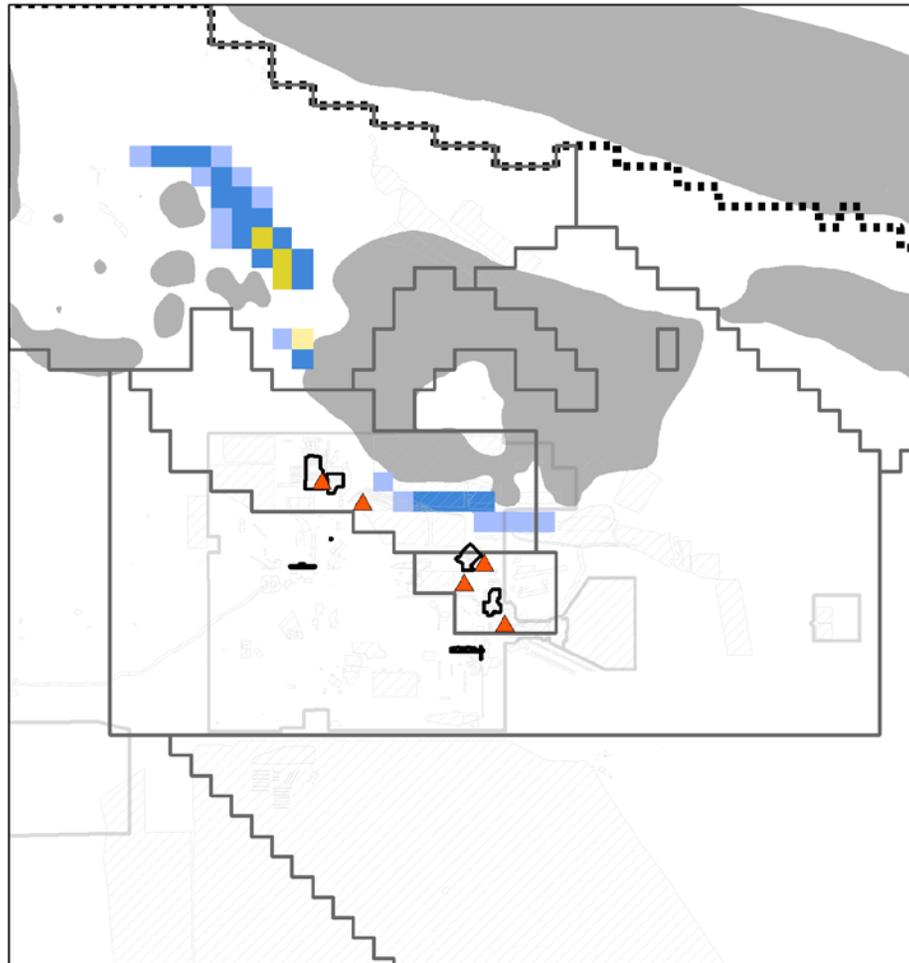
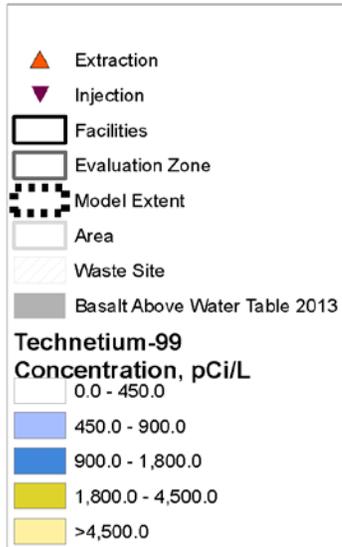
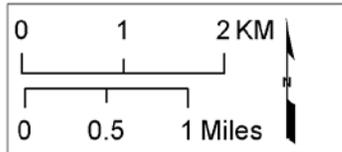
**10 Years
Technetium-99
Scenario 2**



P2R_FS_tc99_10.png (DoubleFigure_FS.mxd)

Figure B-61 - Plan view contours of the technetium-99 plume at simulation time 10 years based on the scenario 2 simulation.

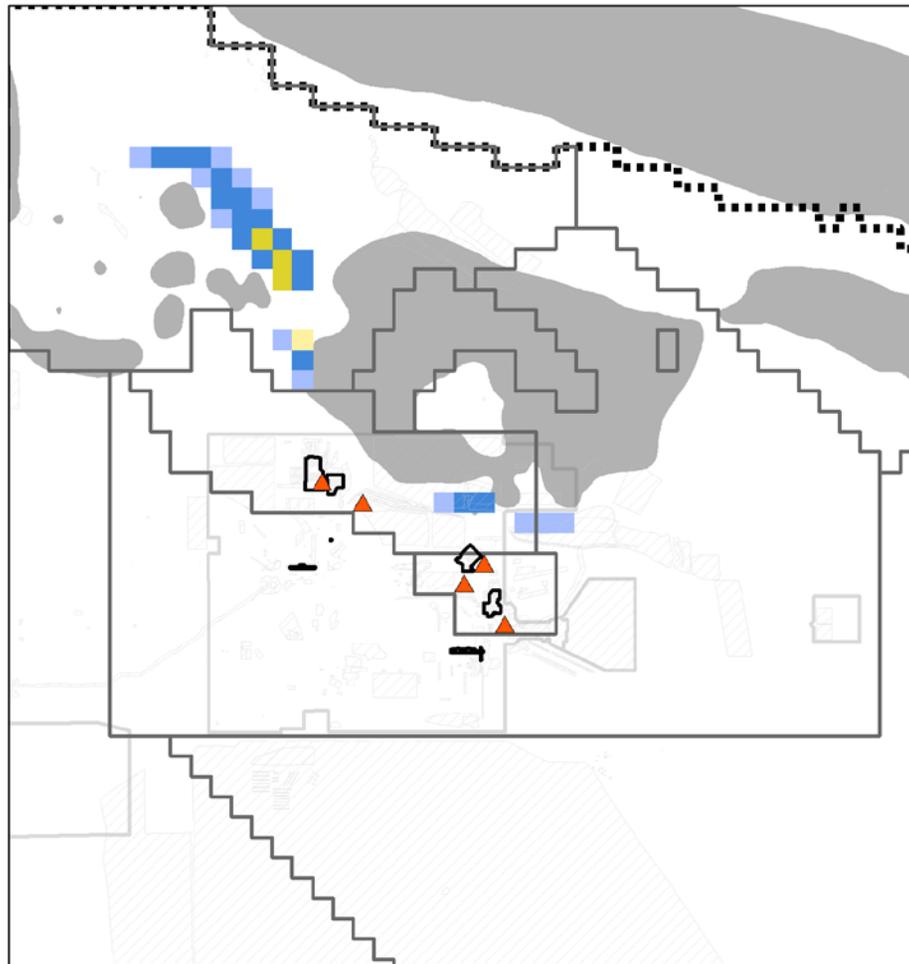
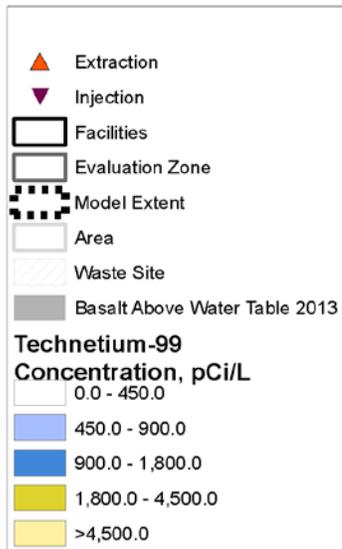
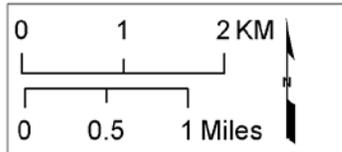
**15 Years
Technetium-99
Scenario 2**



P2R_FS_tc99_15.png (DoubleFigure_FS.mxd)

Figure B-62 - Plan view contours of the technetium-99 plume at simulation time 15 years based on the scenario 2 simulation.

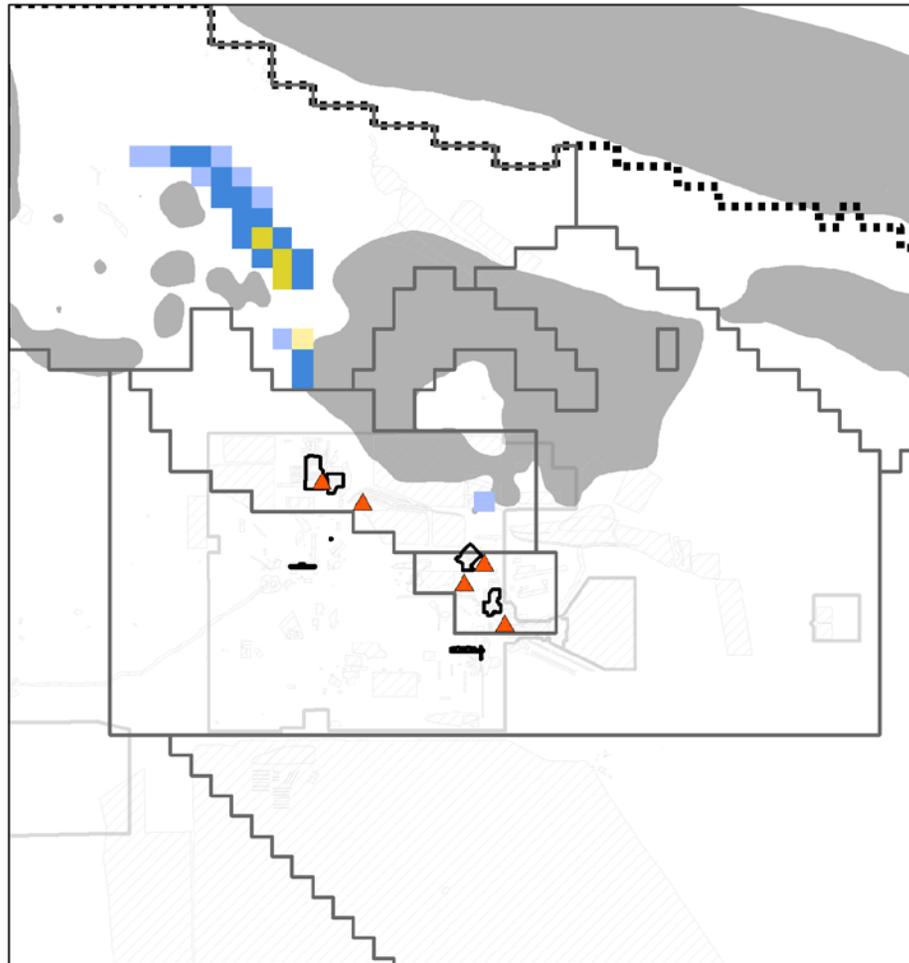
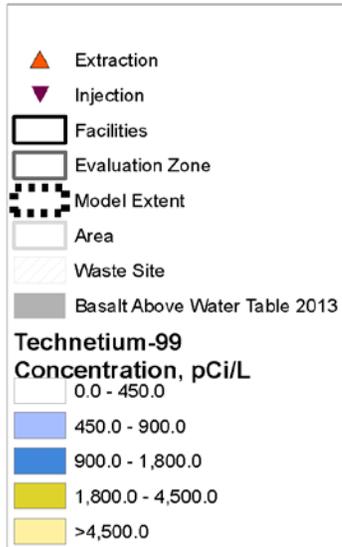
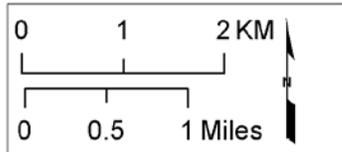
**20 Years
Technetium-99
Scenario 2**



P2R_FS_tc99_20.png (DoubleFigure_FS.mxd)

Figure B-63 - Plan view contours of the technetium-99 plume at simulation time 20 years based on the scenario 2 simulation.

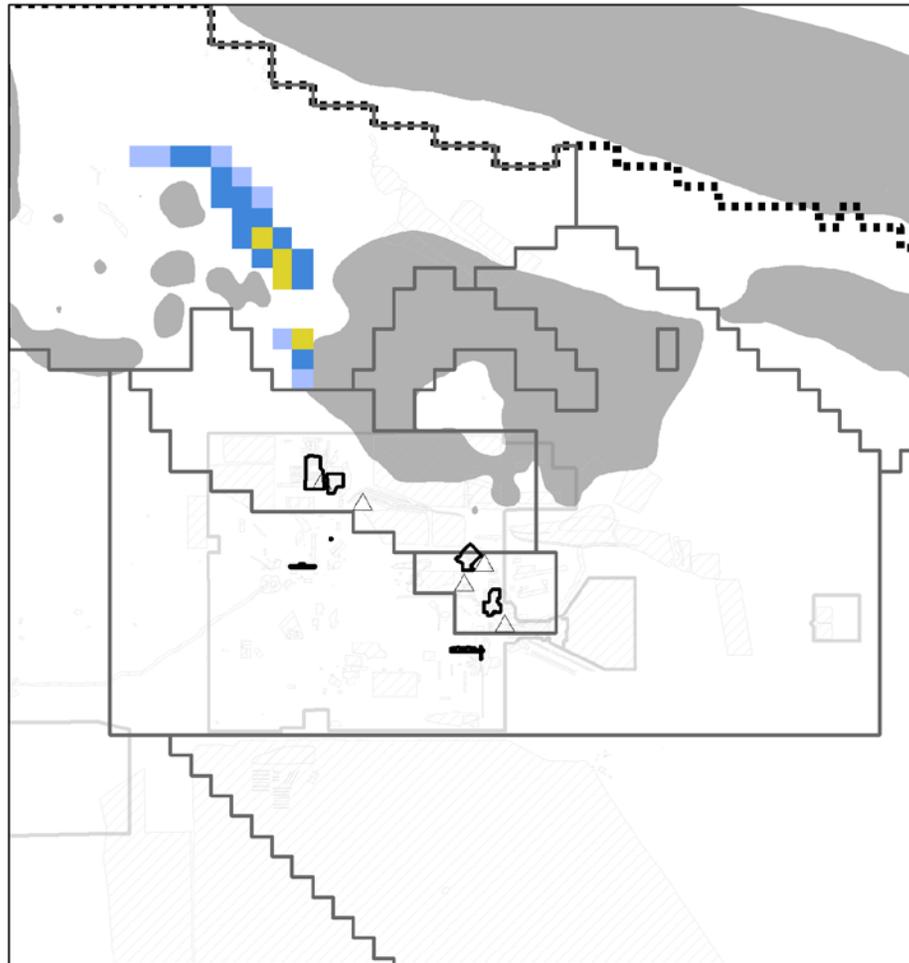
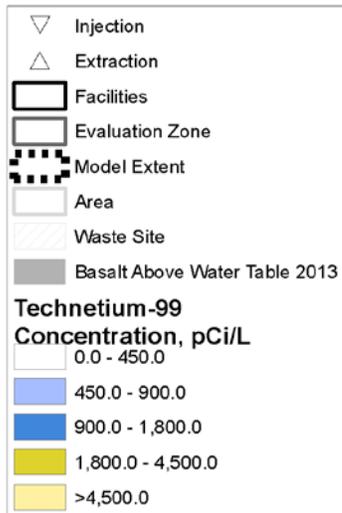
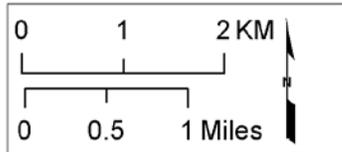
**25 Years
Technetium-99
Scenario 2**



P2R_FS_tc99_25.png (DoubleFigure_FS.mxd)

Figure B-64 - Plan view contours of the technetium-99 plume at simulation time 25 years based on the scenario 2 simulation.

**30 Years
Technetium-99
Scenario 2**



P2R_FS_tc99_30.png (DoubleFigure_FS.mxd)

Figure B-65 - Plan view contours of the technetium-99 plume at simulation time 30 years based on the scenario 2 simulation.

**50 Years
Technetium-99
Scenario 2**

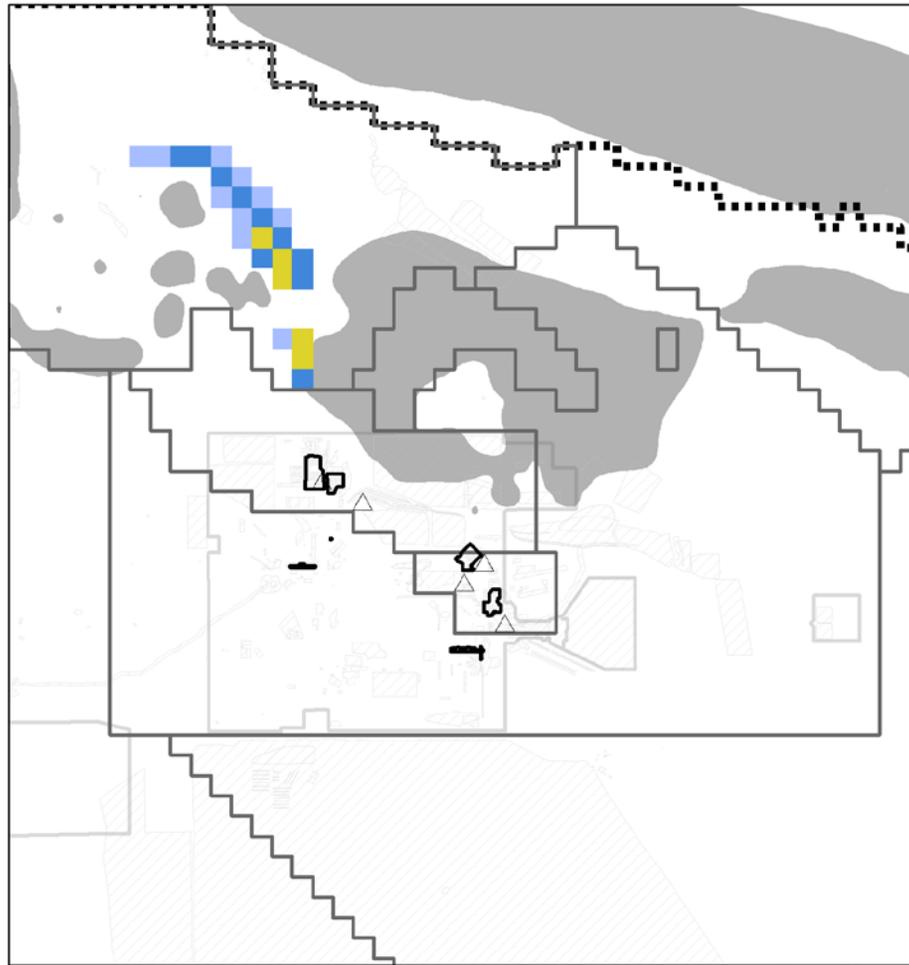
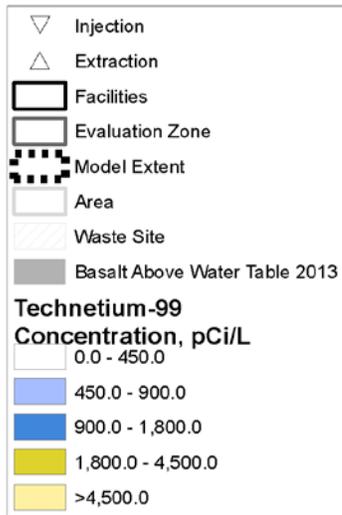
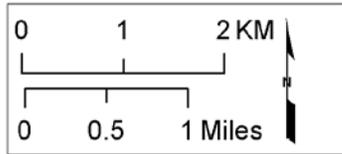


Figure B-66 - Plan view contours of the technetium-99 plume at simulation time 50 years based on the scenario 2 simulation.

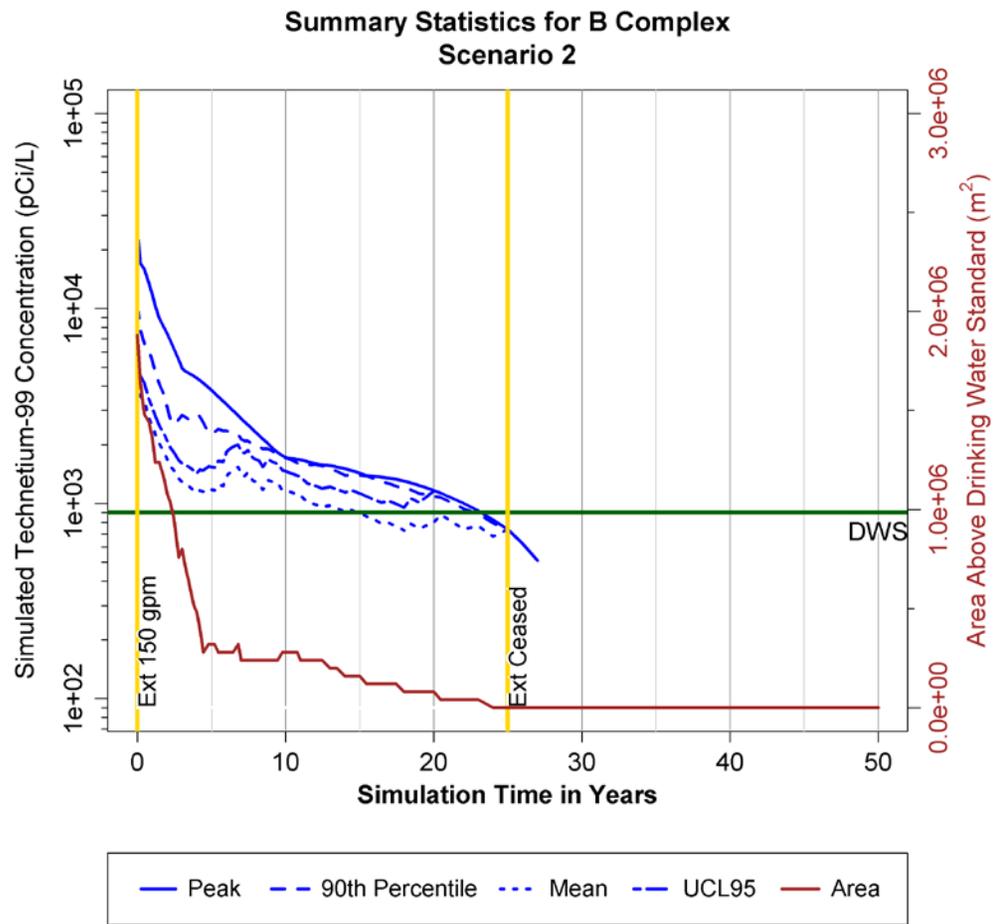


Figure B-67 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 2 simulation.

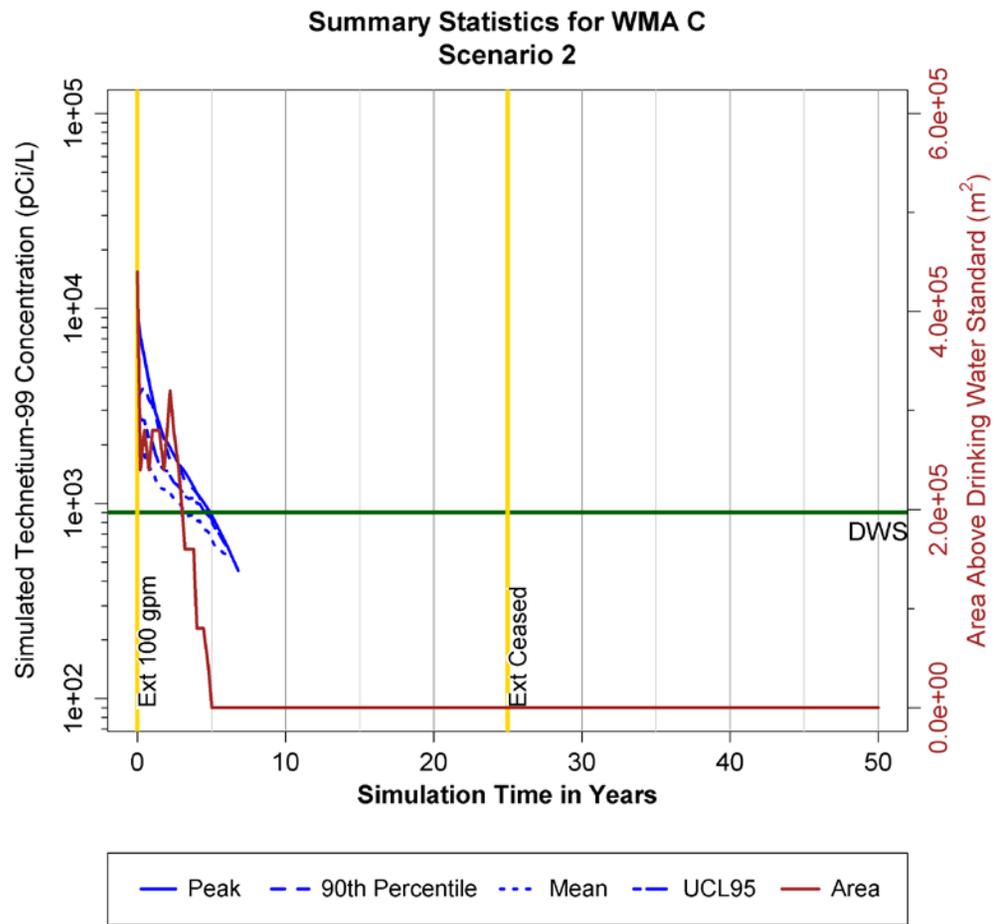


Figure B-68 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 2 simulation.

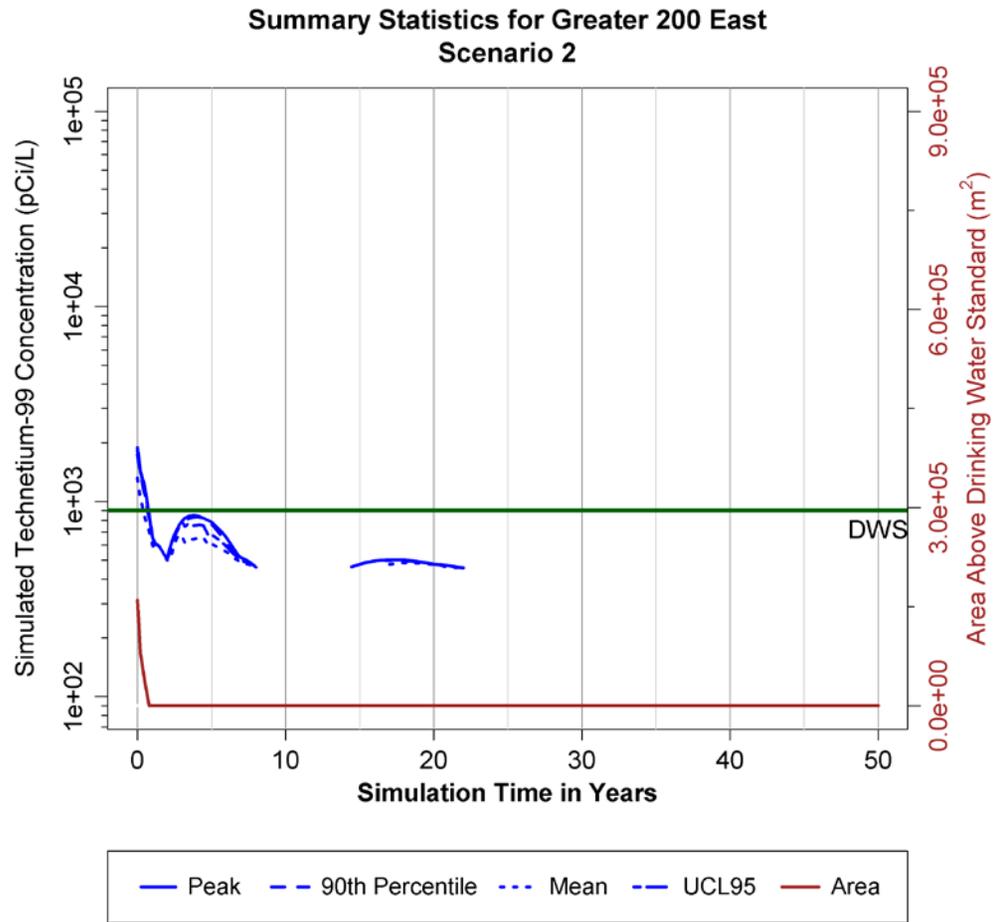


Figure B-69 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 2 simulation.

Summary Statistics for Gable Gap Area
Scenario 2

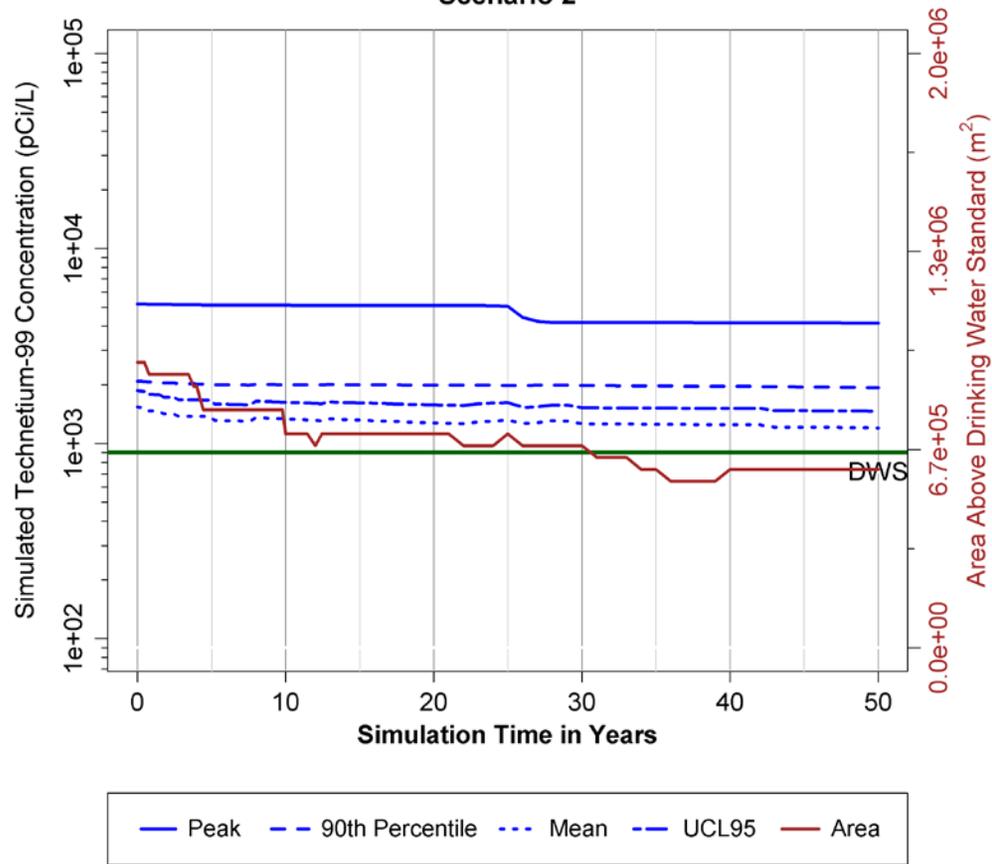
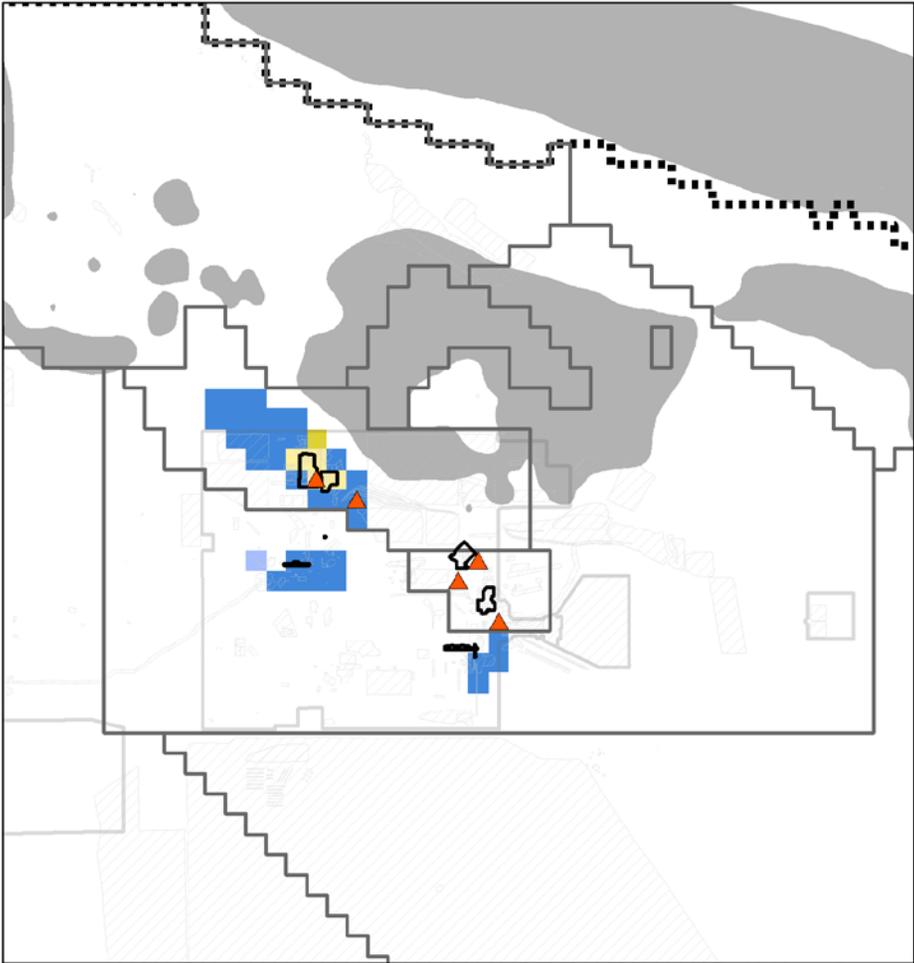
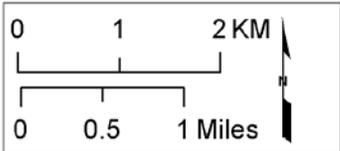


Figure B-70 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 2 simulation.

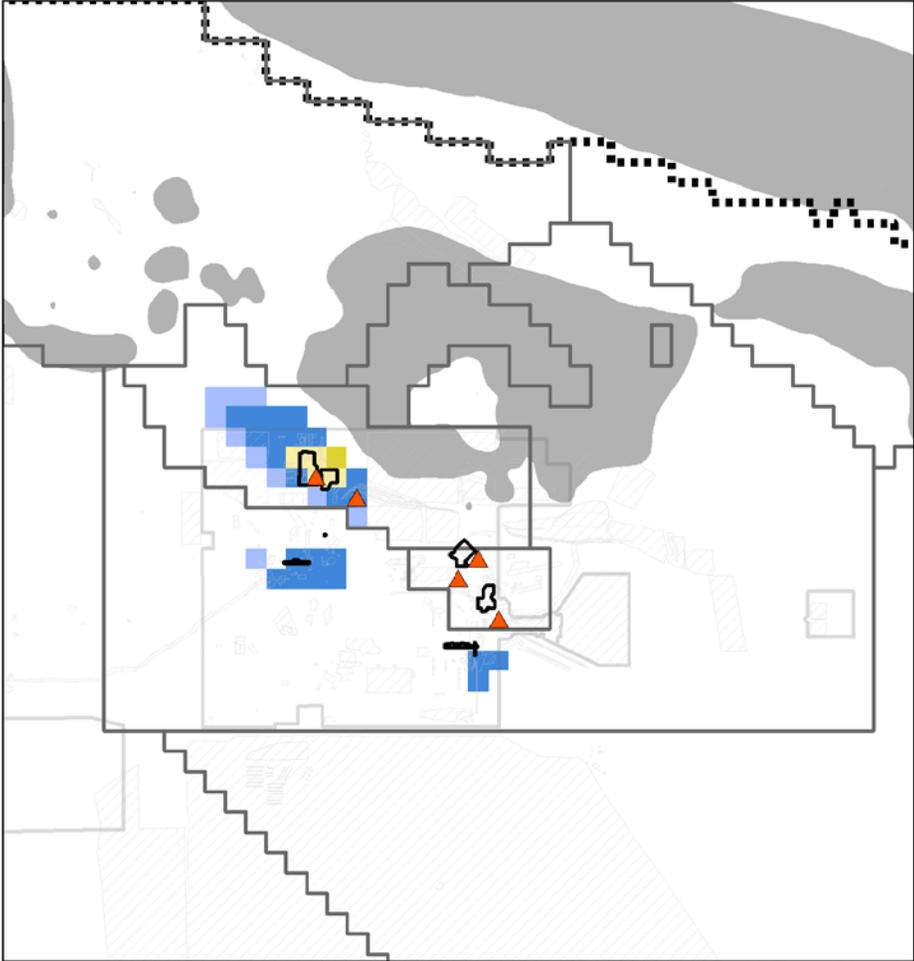
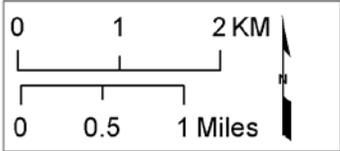
**0 Years
Uranium
Scenario 2**



P2R_FS_u238_0.png (DoubleFigure_FS.mxd)

Figure B-71 - Plan view contours of the uranium plume at simulation time 0 years based on the scenario 2 simulation.

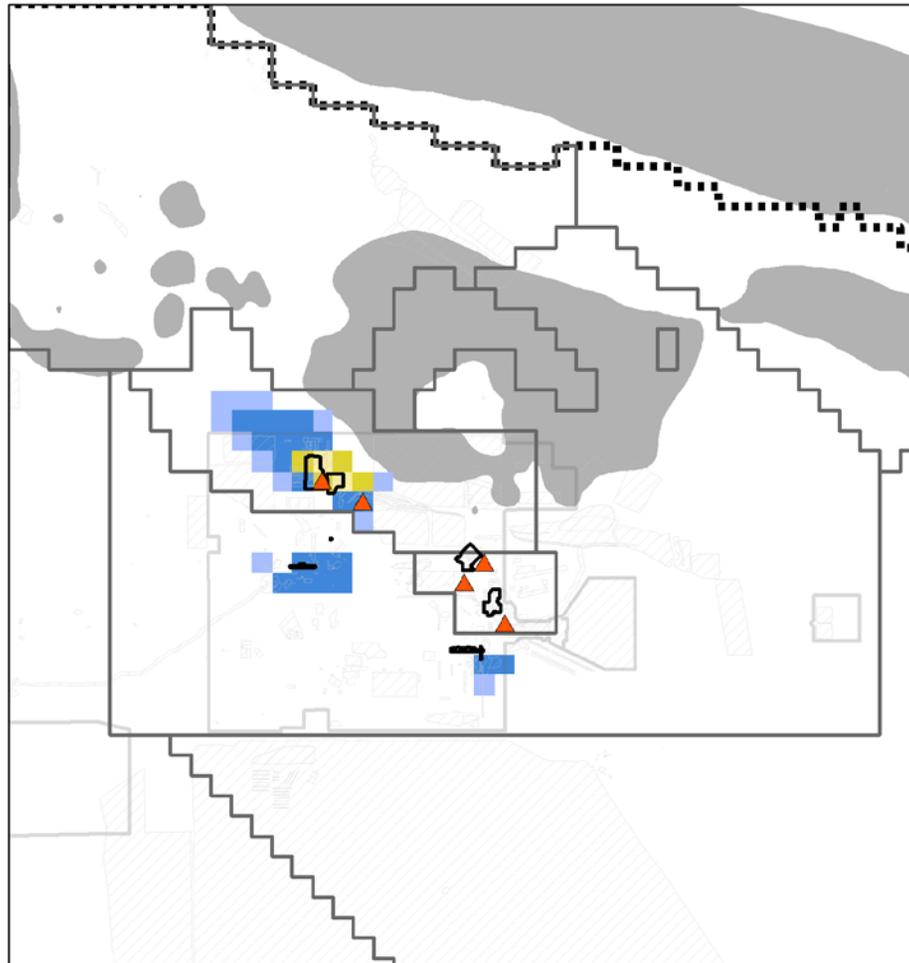
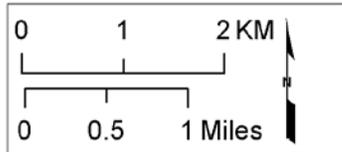
**1 Years
Uranium
Scenario 2**



P2R_FS_u238_1.png (DoubleFigure_FS.mxd)

Figure B-72 - Plan view contours of the uranium plume at simulation time 1 years based on the scenario 2 simulation.

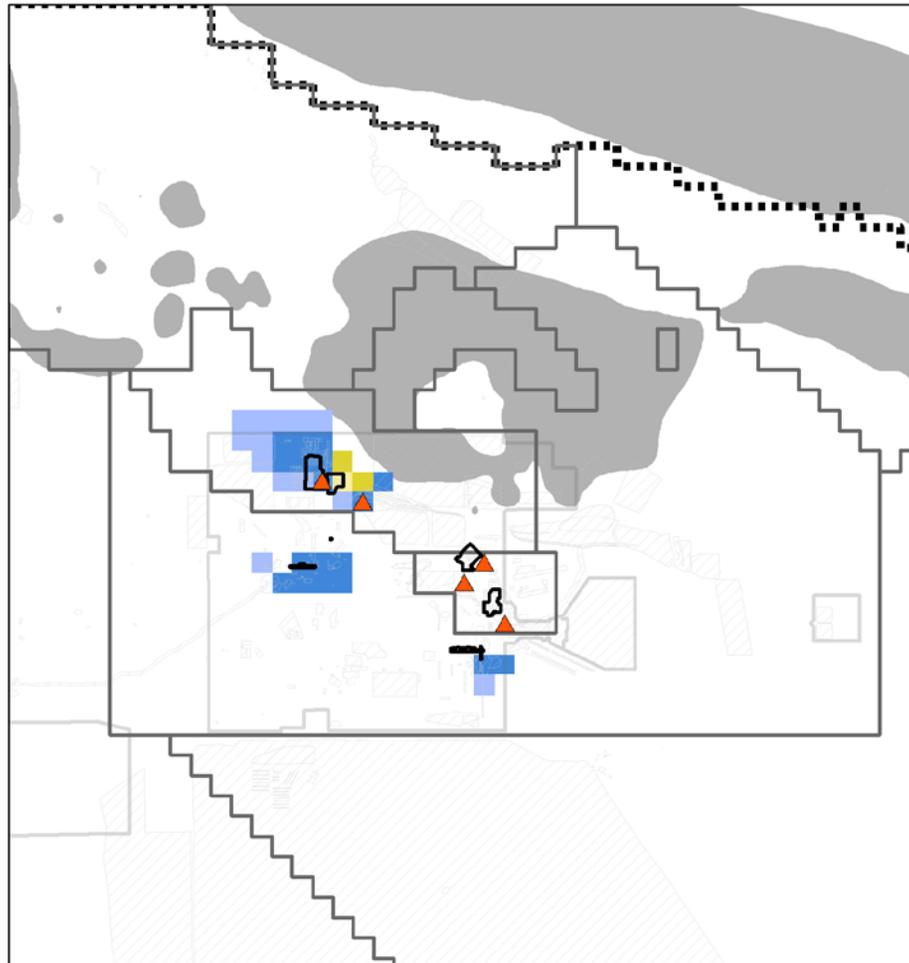
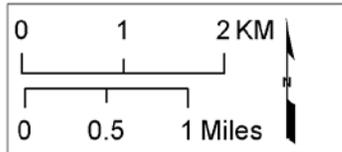
**2 Years
Uranium
Scenario 2**



P2R_FS_u238_2.png (DoubleFigure_FS.mxd)

Figure B-73 - Plan view contours of the uranium plume at simulation time 2 years based on the scenario 2 simulation.

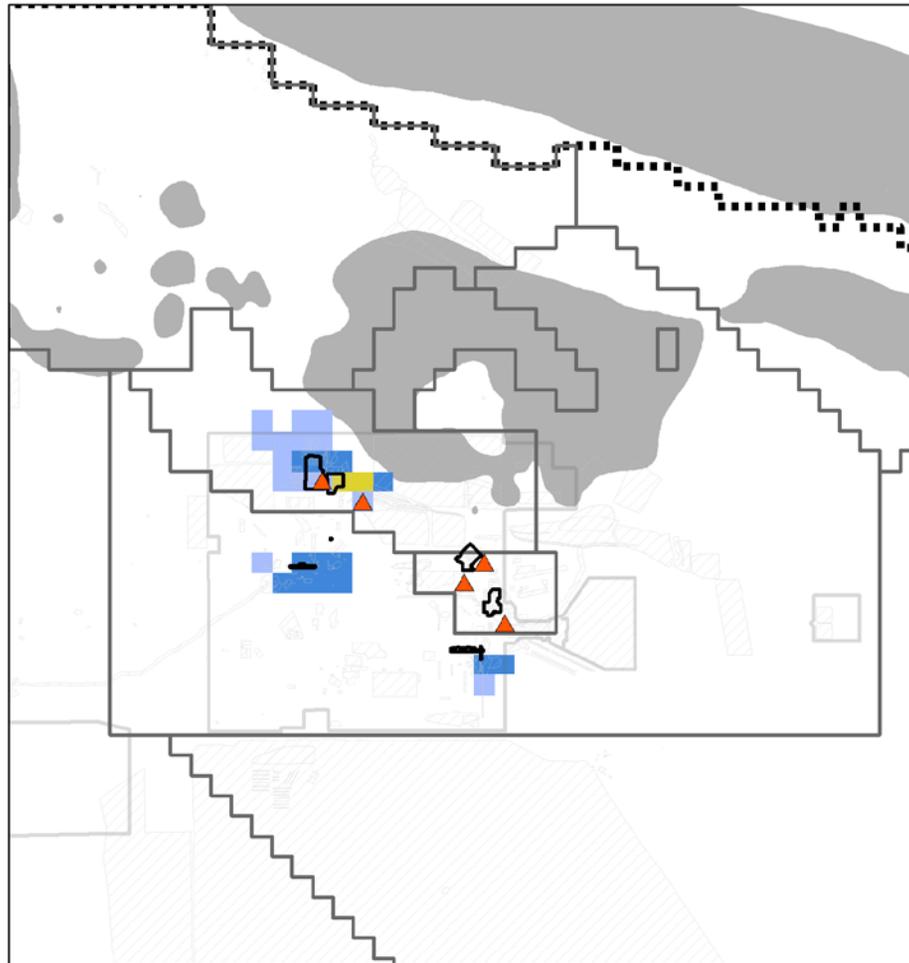
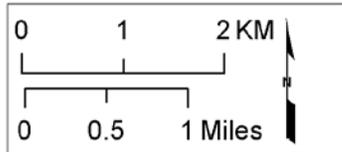
**5 Years
Uranium
Scenario 2**



P2R_FS_u238_5.png (DoubleFigure_FS.mxd)

Figure B-74 - Plan view contours of the uranium plume at simulation time 5 years based on the scenario 2 simulation.

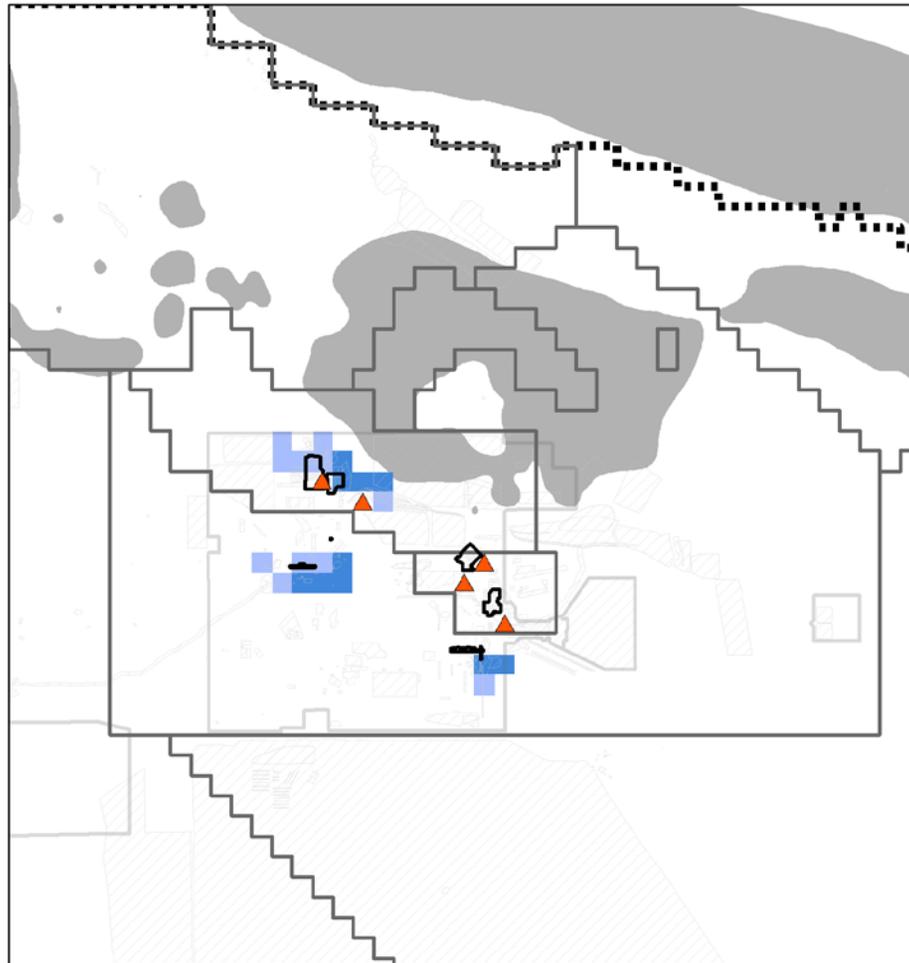
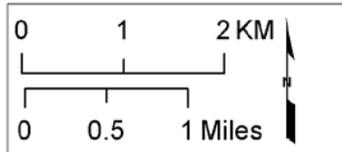
**10 Years
Uranium
Scenario 2**



P2R_FS_u238_10.png (DoubleFigure_FS.mxd)

Figure B-75 - Plan view contours of the uranium plume at simulation time 10 years based on the scenario 2 simulation.

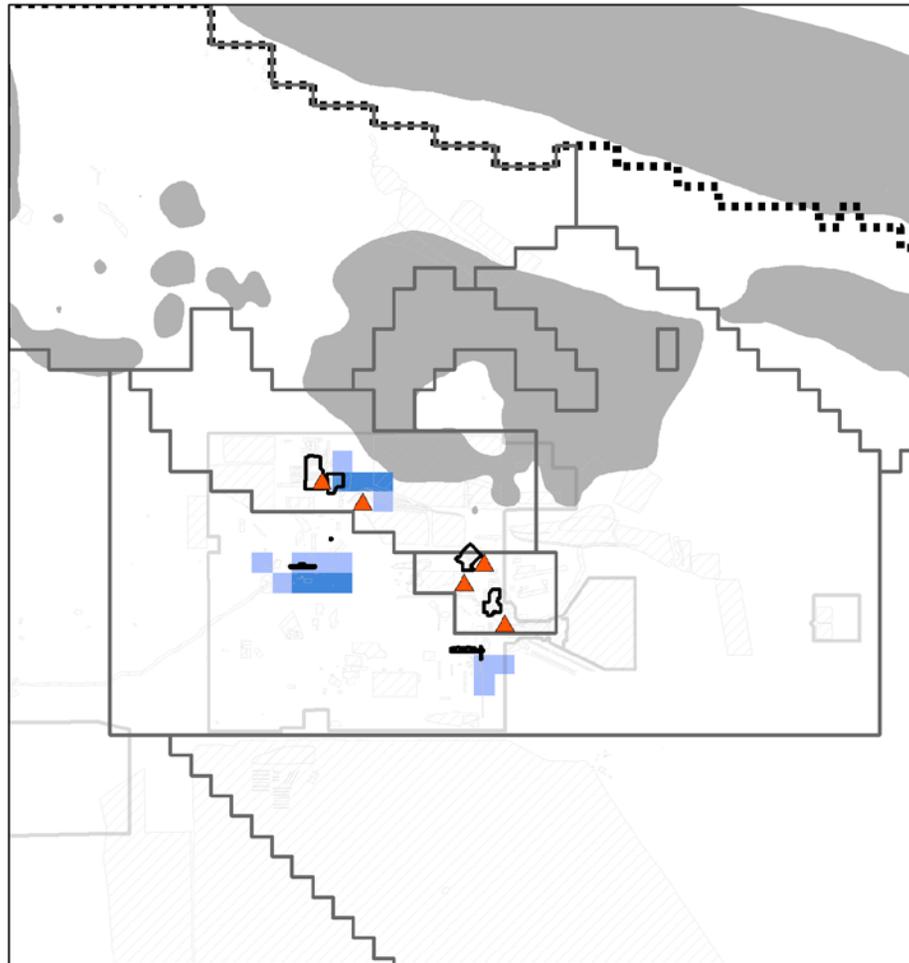
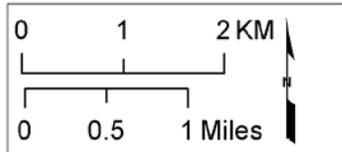
**15 Years
Uranium
Scenario 2**



P2R_FS_u238_15.png (DoubleFigure_FS.mxd)

Figure B-76 - Plan view contours of the uranium plume at simulation time 15 years based on the scenario 2 simulation.

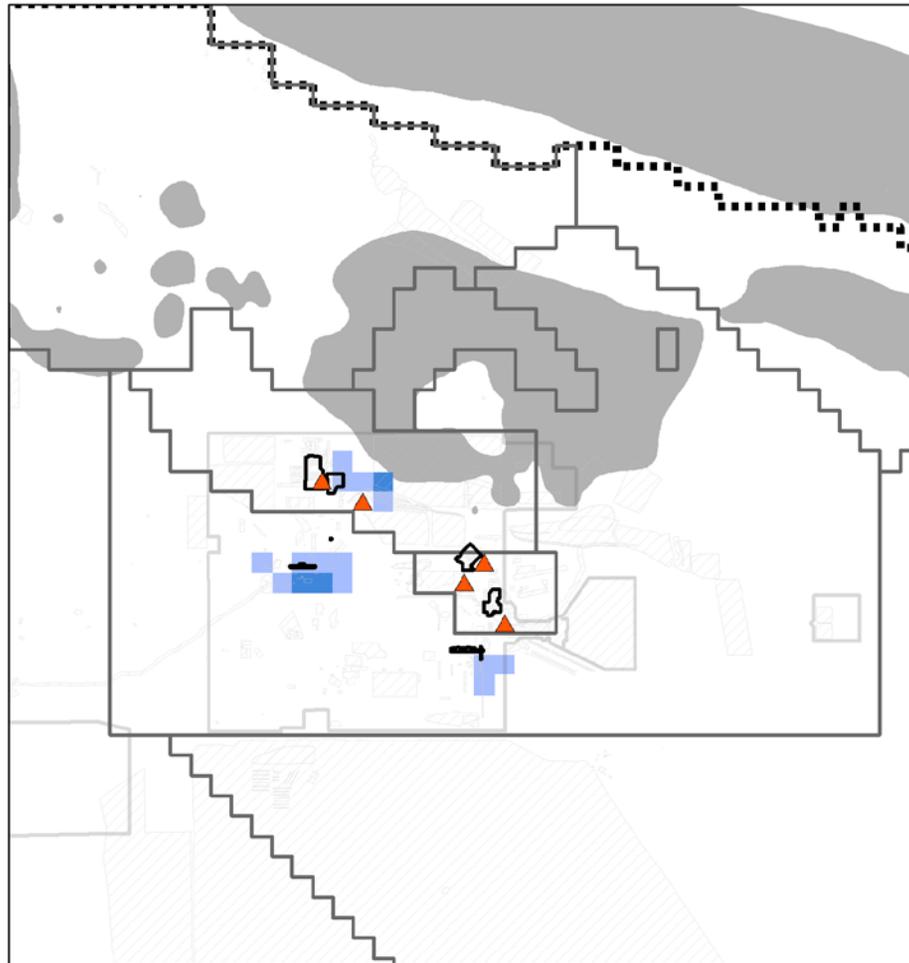
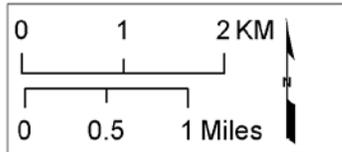
**20 Years
Uranium
Scenario 2**



P2R_FS_u238_20.png (DoubleFigure_FS.mxd)

Figure B-77 - Plan view contours of the uranium plume at simulation time 20 years based on the scenario 2 simulation.

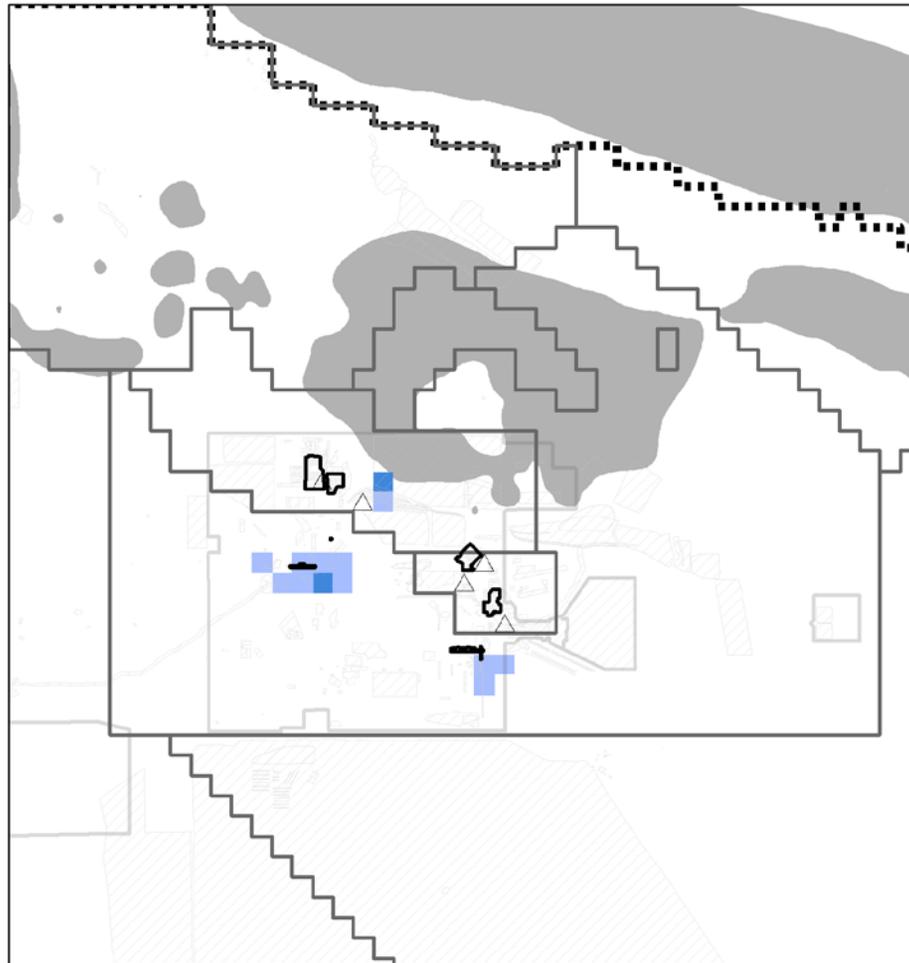
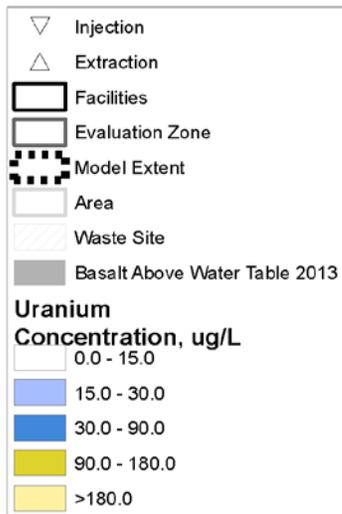
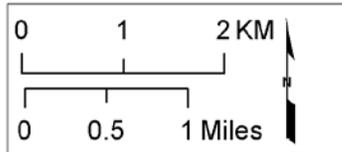
**25 Years
Uranium
Scenario 2**



P2R_FS_u238_25.png (DoubleFigure_FS.mxd)

Figure B-78 - Plan view contours of the uranium plume at simulation time 25 years based on the scenario 2 simulation.

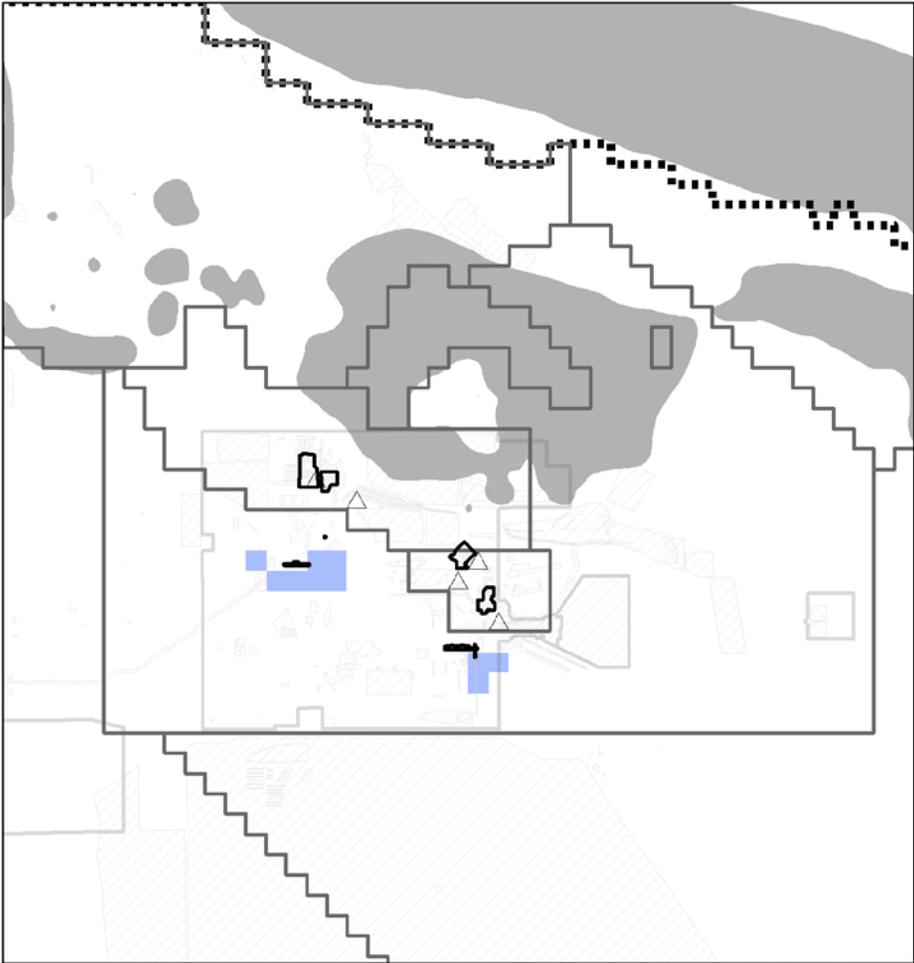
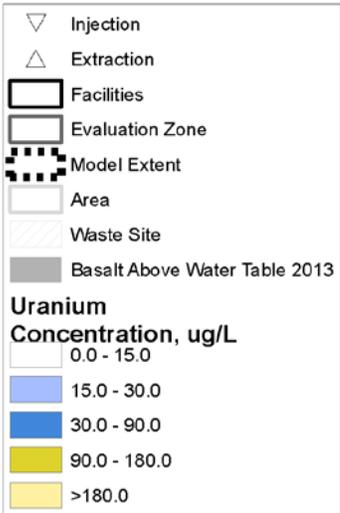
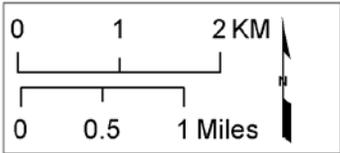
**30 Years
Uranium
Scenario 2**



P2R_FS_u238_30.png (DoubleFigure_FS.mxd)

Figure B-79 - Plan view contours of the uranium plume at simulation time 30 years based on the scenario 2 simulation.

**50 Years
Uranium
Scenario 2**



P2R_FS_u238_50.png (DoubleFigure_FS.mxd)

Figure B-80 - Plan view contours of the uranium plume at simulation time 50 years based on the scenario 2 simulation.

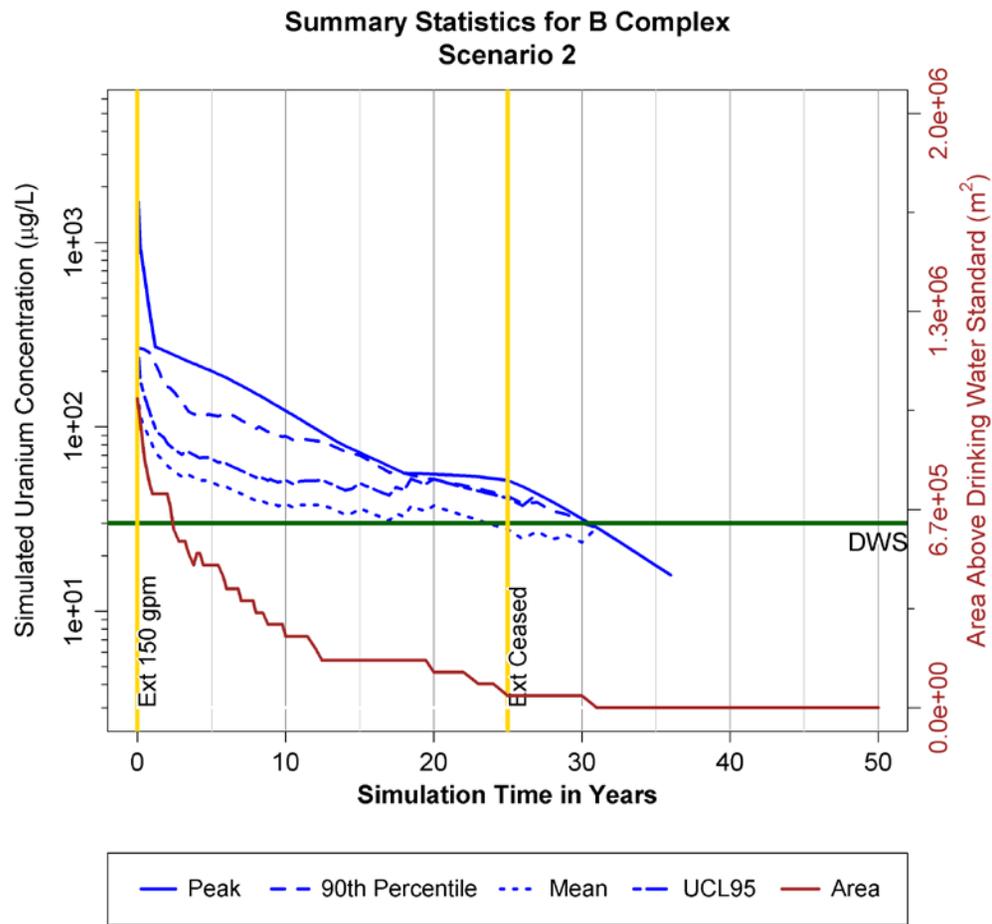


Figure B-81 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 2 simulation.

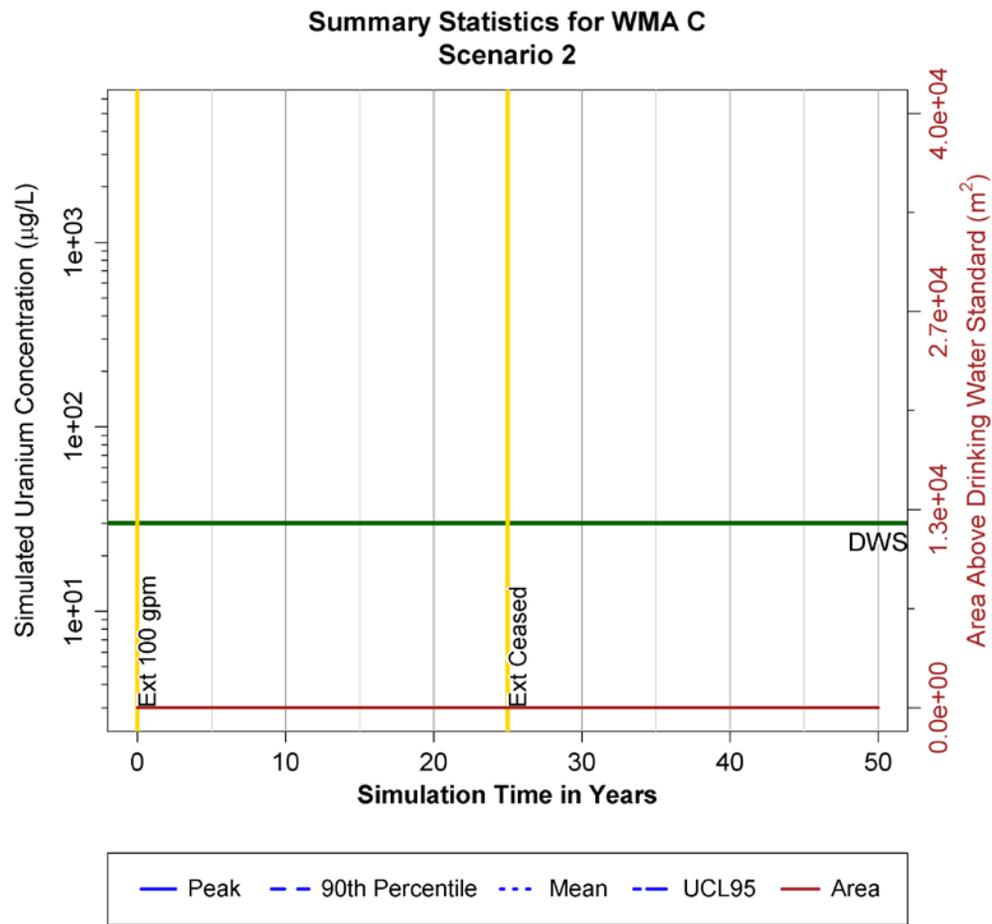


Figure B-82 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 2 simulation.

Summary Statistics for Greater 200 East
Scenario 2

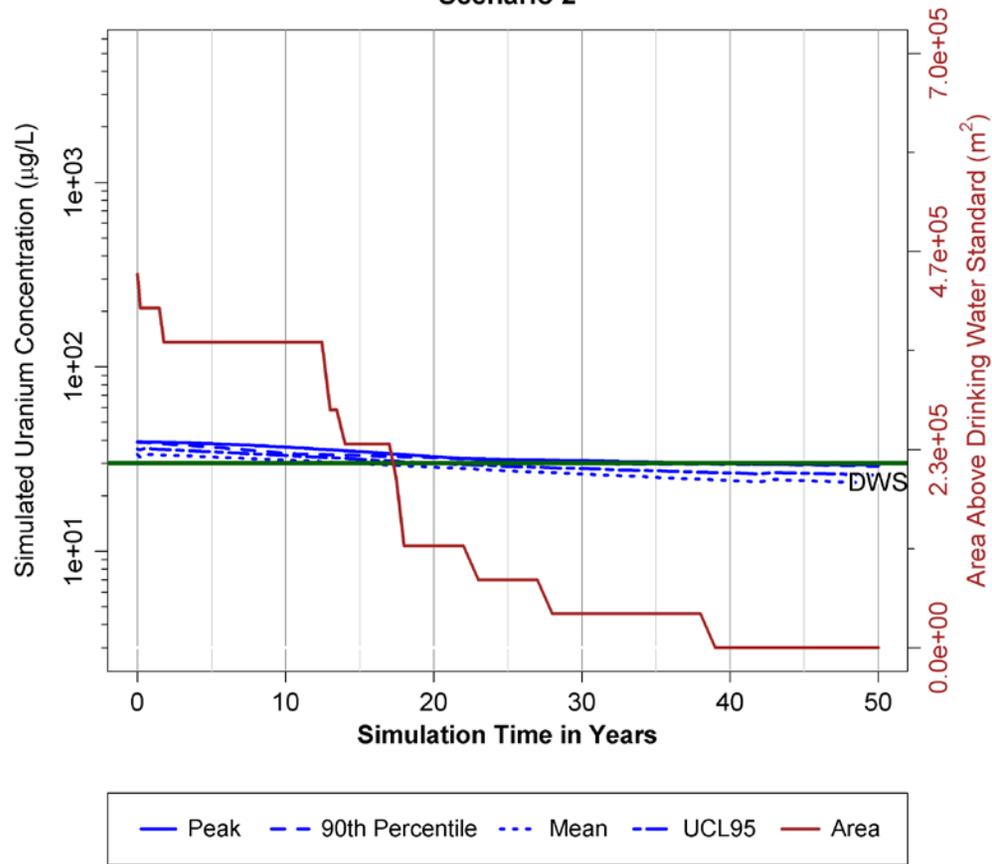


Figure B-83 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 2 simulation.

Summary Statistics for Gable Gap Area
Scenario 2

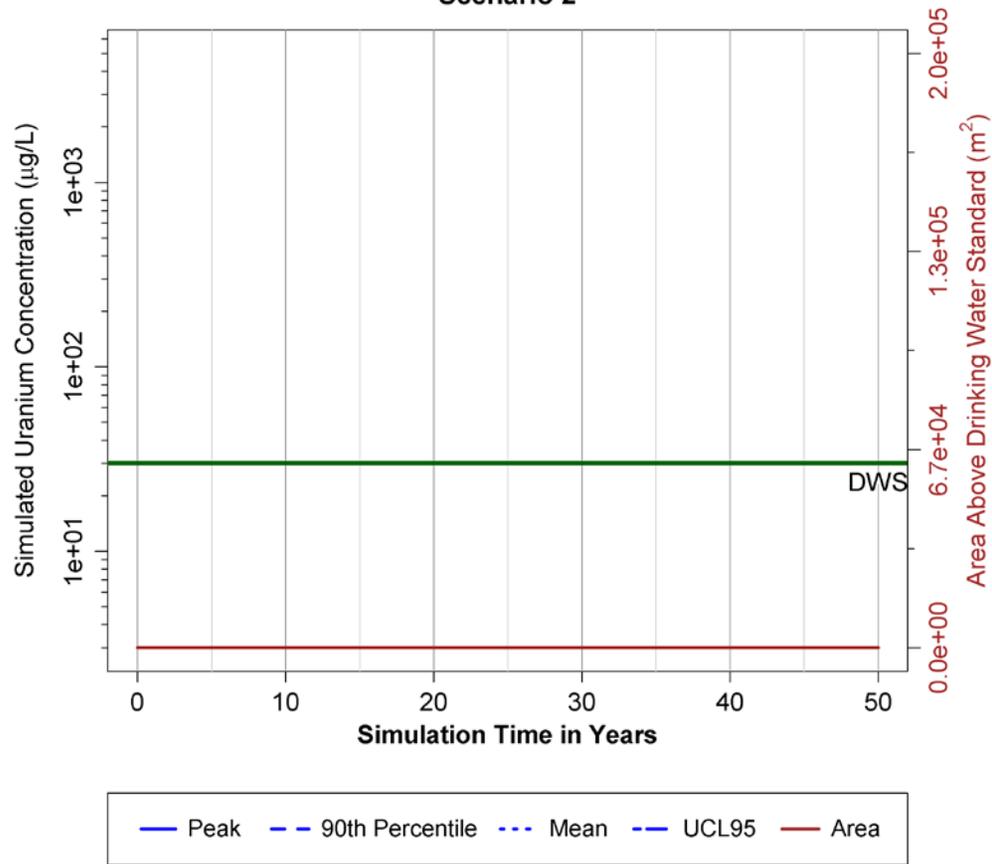
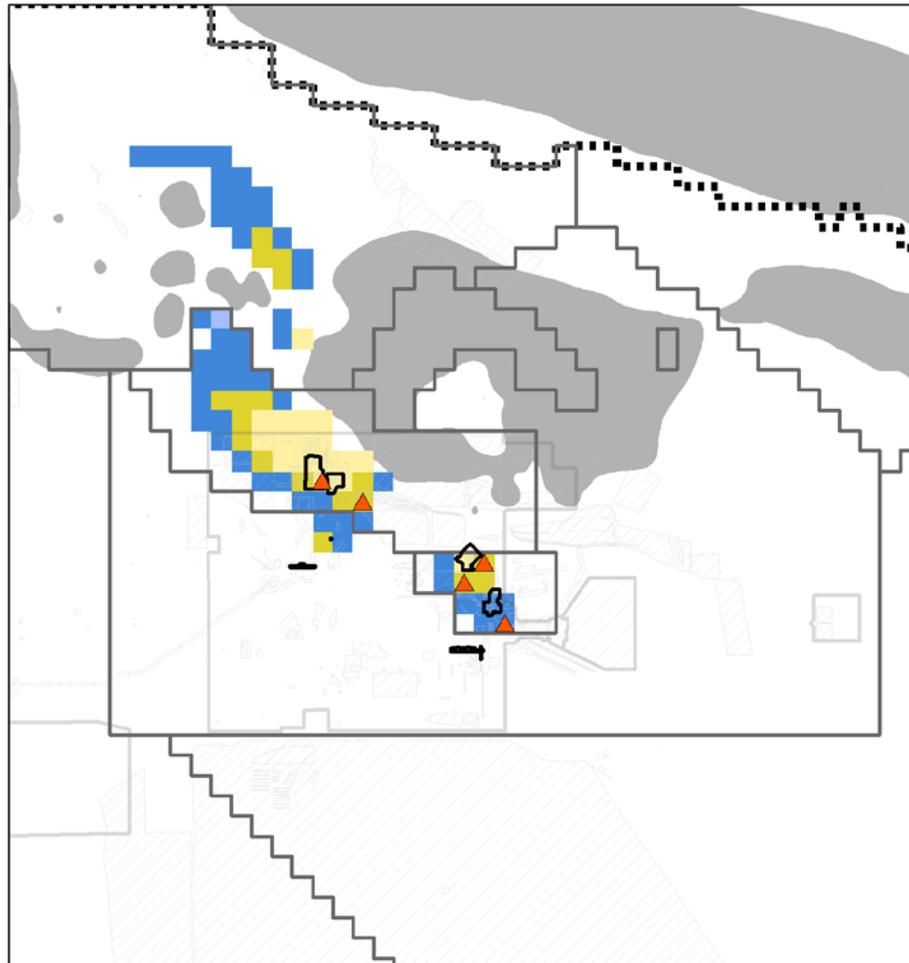
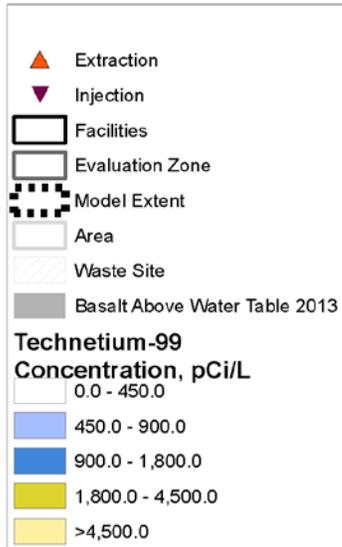
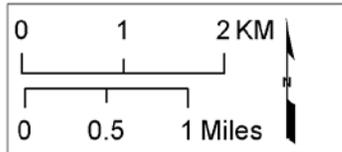


Figure B-84 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 2 simulation.

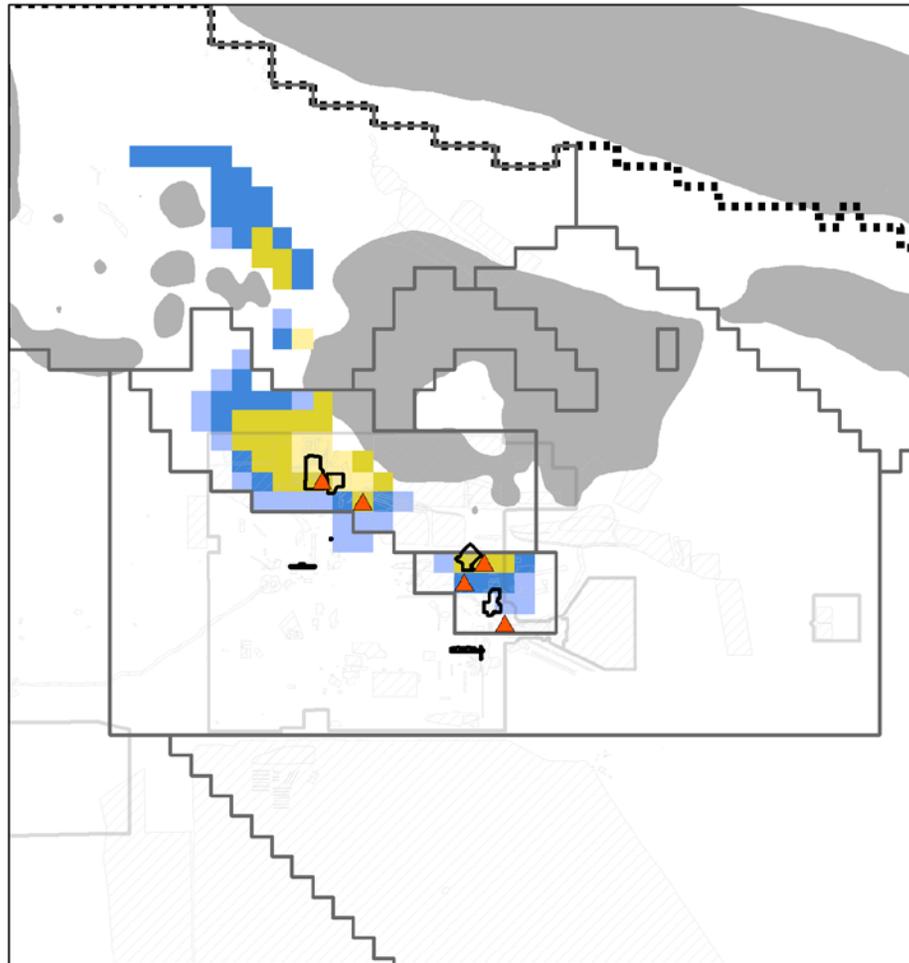
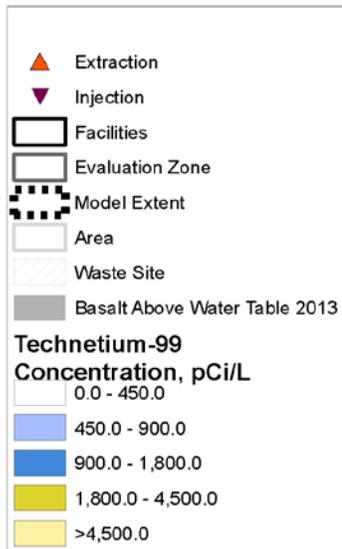
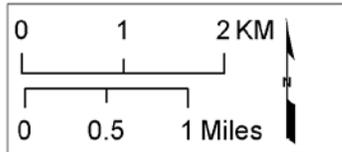
**0 Years
Technetium-99
Scenario 2
Continuing Source**



P2R_FS_tc99_0.png (DoubleFigure_FS.mxd)

Figure B-85 - Plan view contours of the technetium-99 plume at simulation time 0 years based on the scenario 2 simulation with a continuing source term.

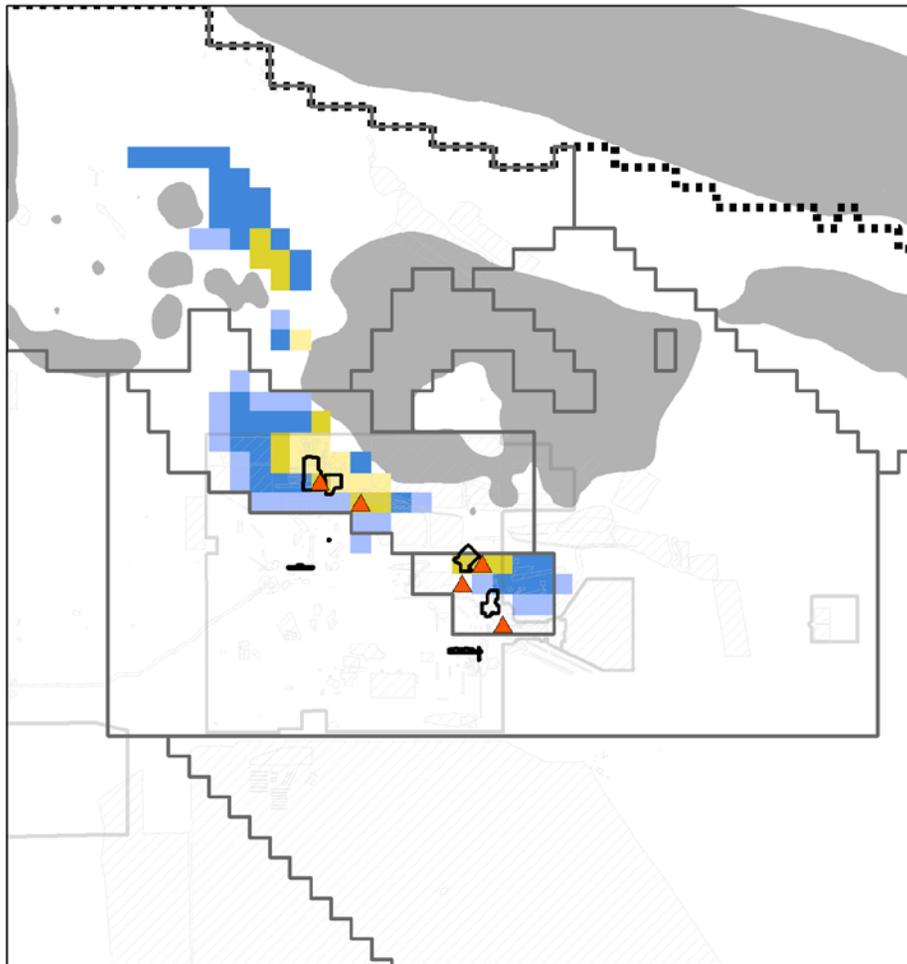
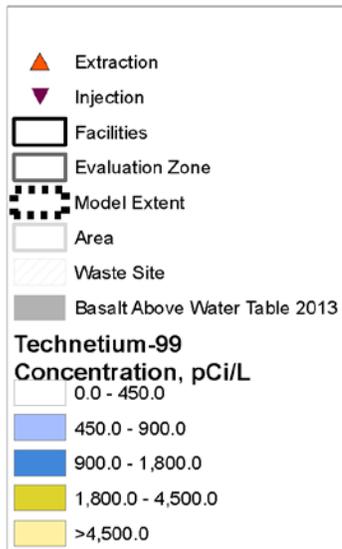
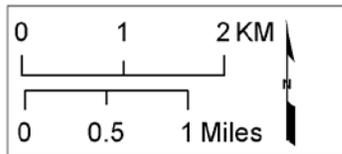
**1 Years
Technetium-99
Scenario 2
Continuing Source**



P2R_FS_tc99_1.png (DoubleFigure_FS.mxd)

Figure B-86 - Plan view contours of the technetium-99 plume at simulation time 1 years based on the scenario 2 simulation with a continuing source term.

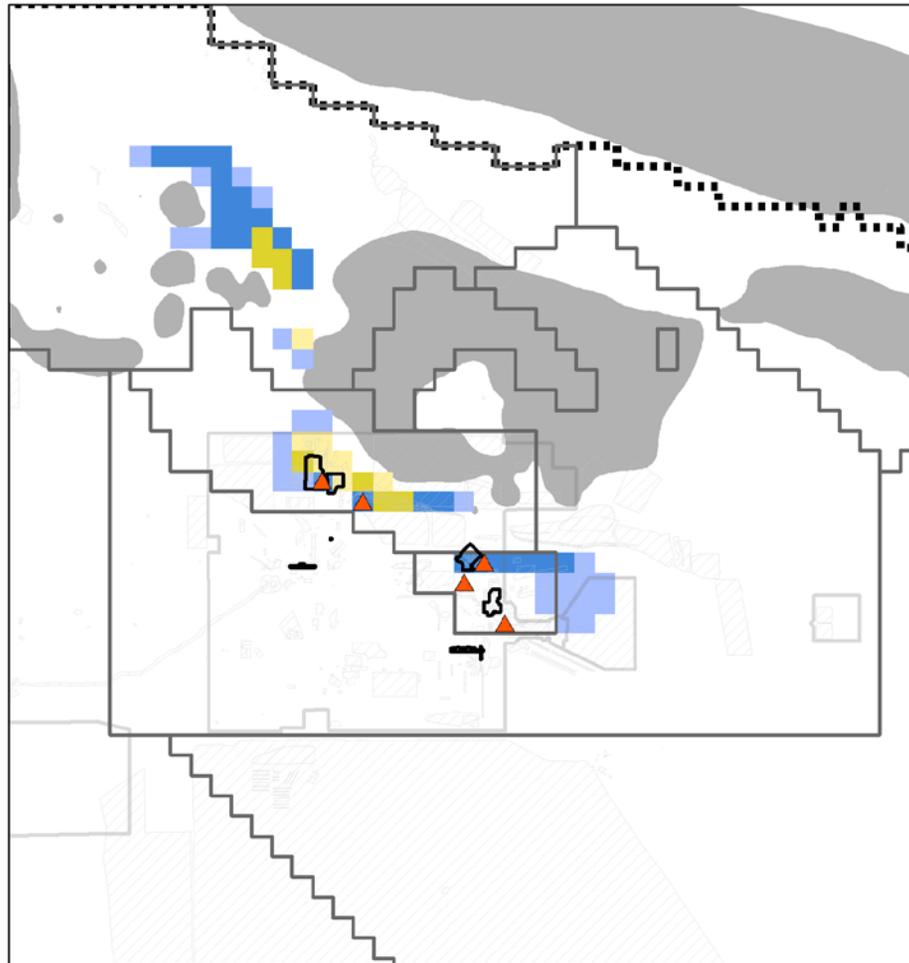
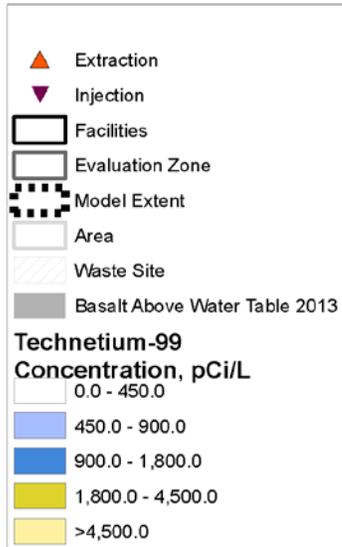
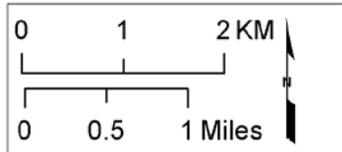
**2 Years
Technetium-99
Scenario 2
Continuing Source**



P2R_FS_tc99_2.png (DoubleFigure_FS.mxd)

Figure B-87 - Plan view contours of the technetium-99 plume at simulation time 2 years based on the scenario 2 simulation with a continuing source term.

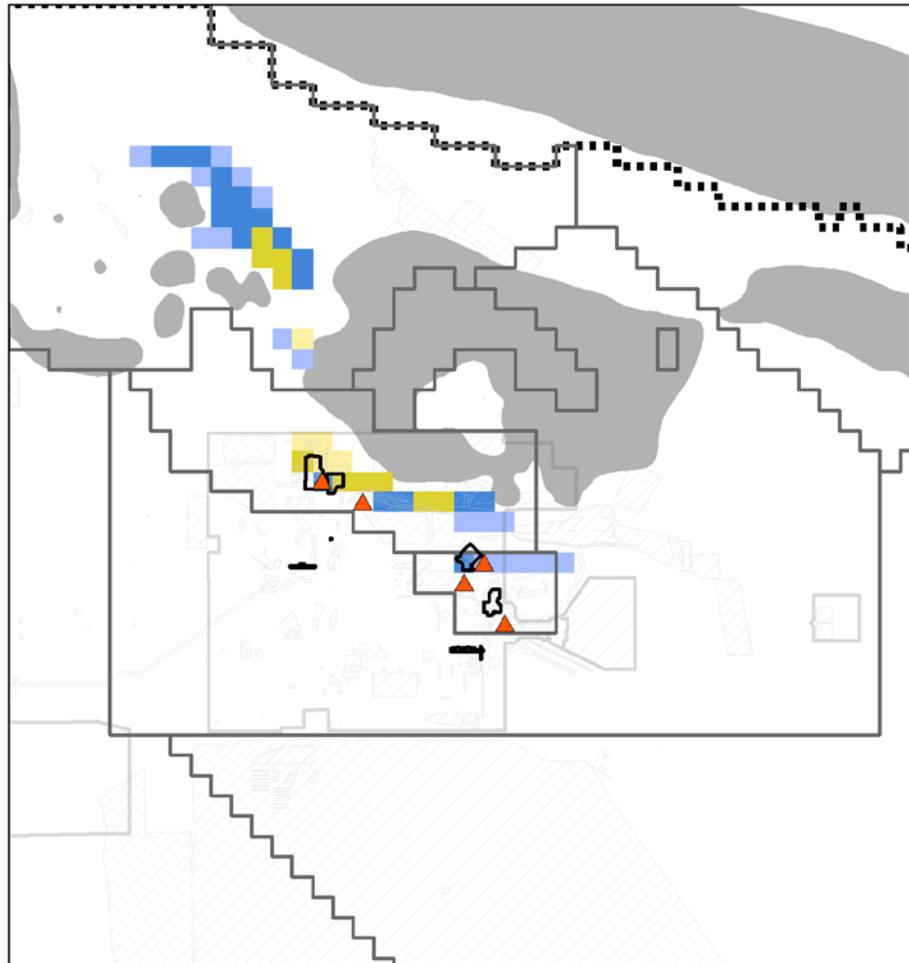
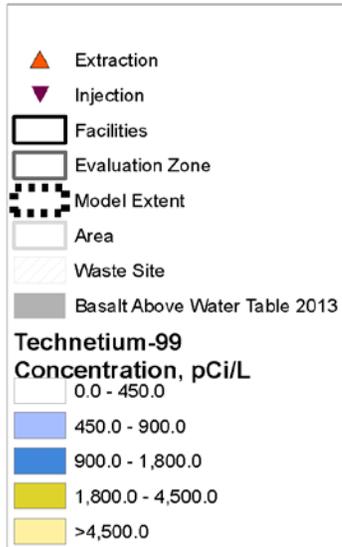
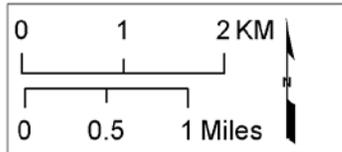
**5 Years
Technetium-99
Scenario 2
Continuing Source**



P2R_FS_tc99_5.png (DoubleFigure_FS.mxd)

Figure B-88 - Plan view contours of the technetium-99 plume at simulation time 5 years based on the scenario 2 simulation with a continuing source term.

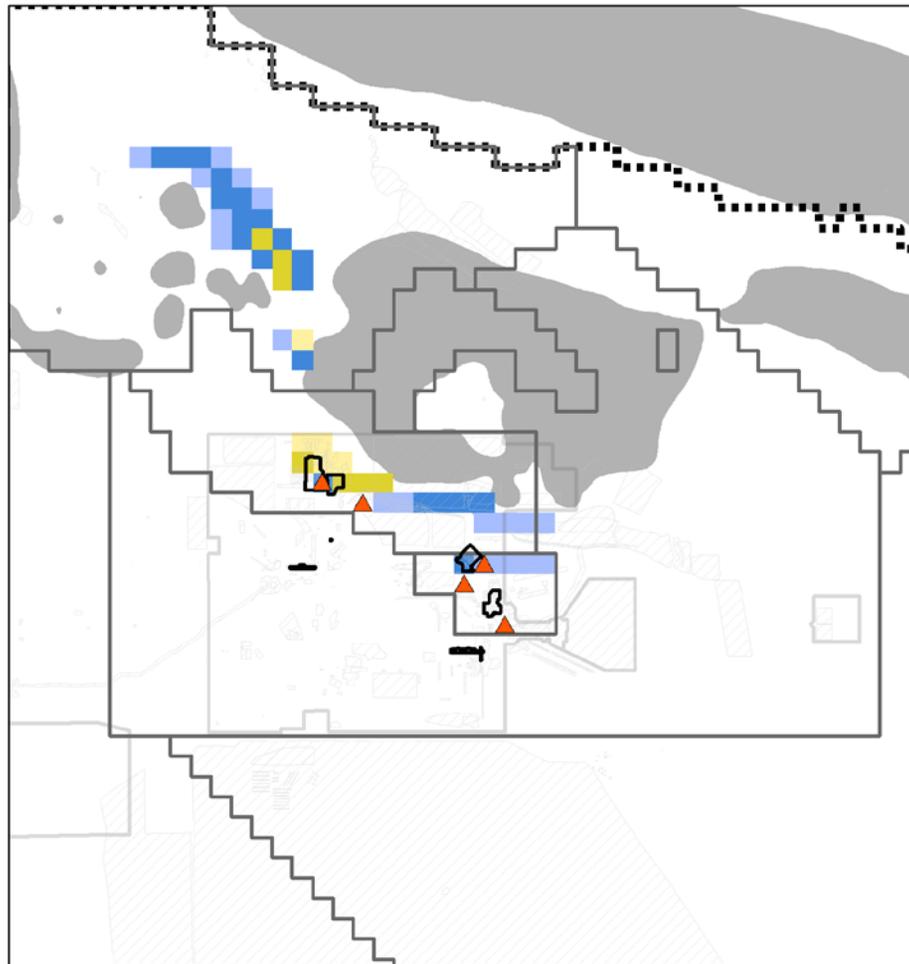
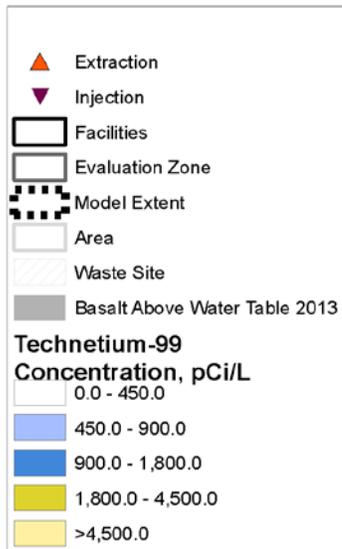
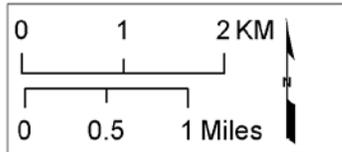
**10 Years
Technetium-99
Scenario 2
Continuing Source**



P2R_FS_tc99_10.png (DoubleFigure_FS.mxd)

Figure B-89 - Plan view contours of the technetium-99 plume at simulation time 10 years based on the scenario 2 simulation with a continuing source term.

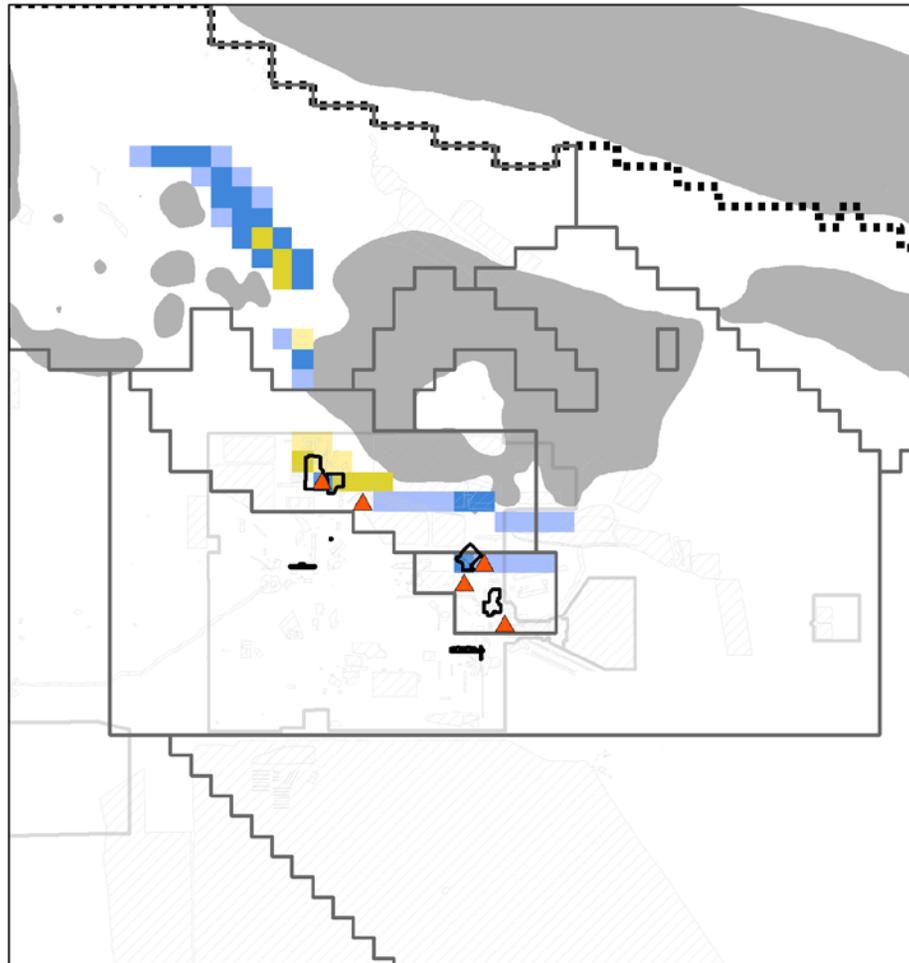
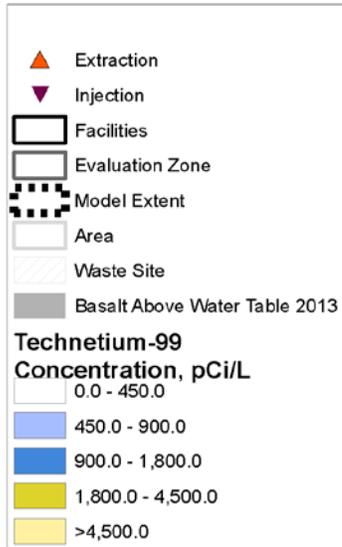
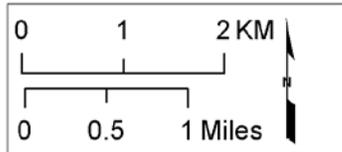
**15 Years
Technetium-99
Scenario 2
Continuing Source**



P2R_FS_tc99_15.png (DoubleFigure_FS.mxd)

Figure B-90 - Plan view contours of the technetium-99 plume at simulation time 15 years based on the scenario 2 simulation with a continuing source term.

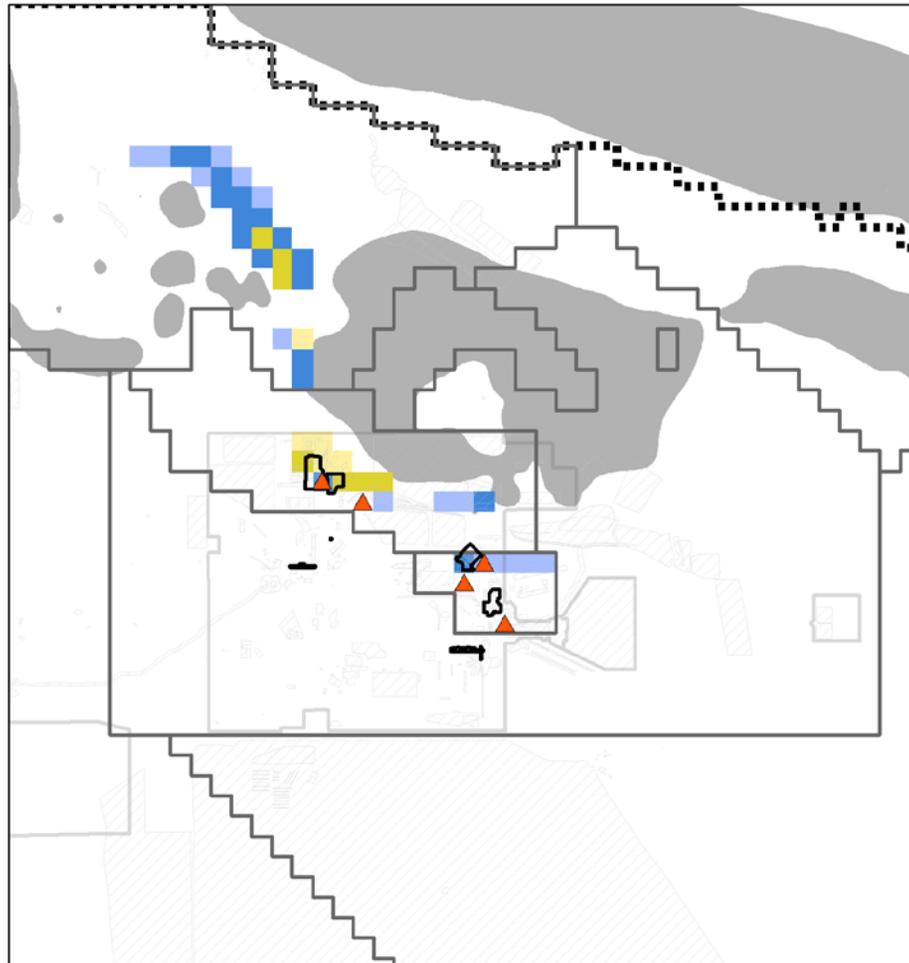
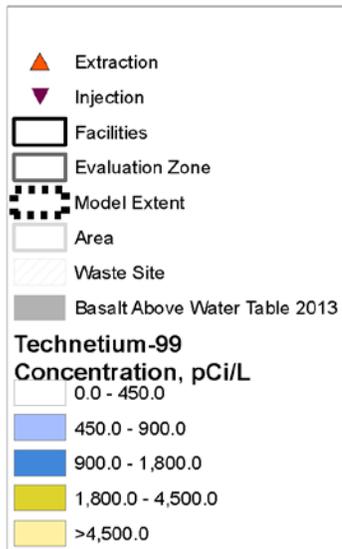
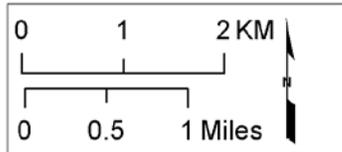
**20 Years
Technetium-99
Scenario 2
Continuing Source**



P2R_FS_tc99_20.png (DoubleFigure_FS.mxd)

Figure B-91 - Plan view contours of the technetium-99 plume at simulation time 20 years based on the scenario 2 simulation with a continuing source term.

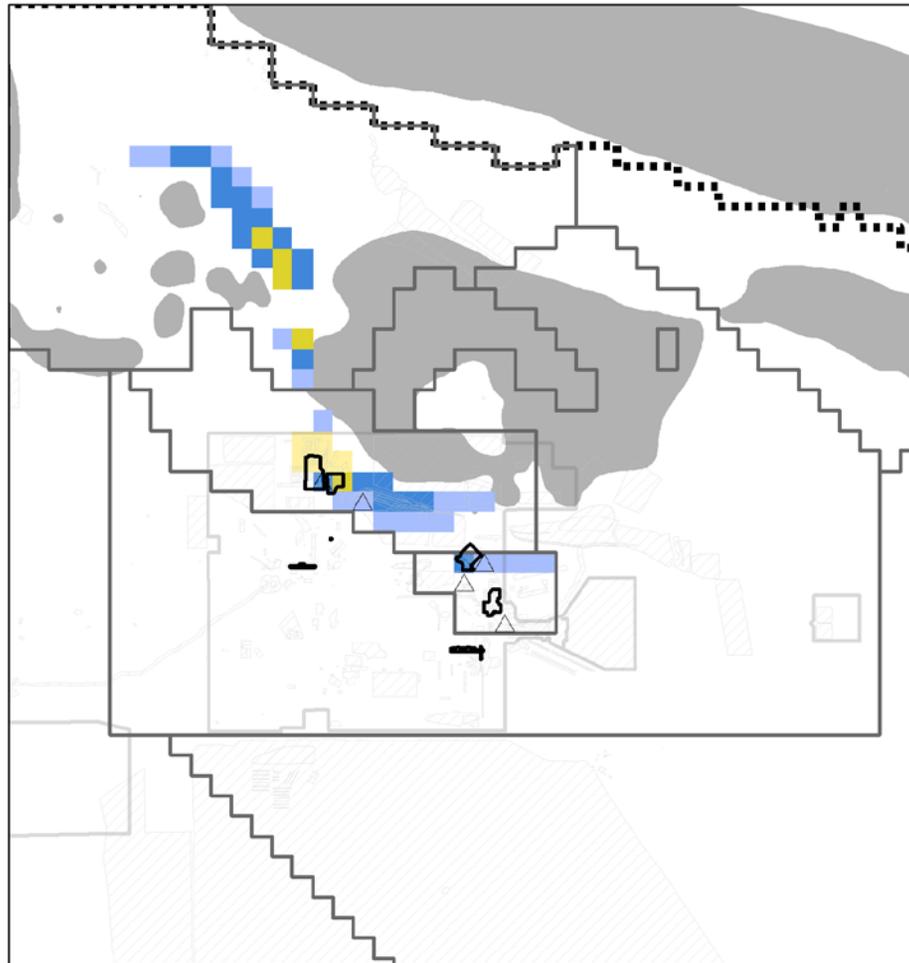
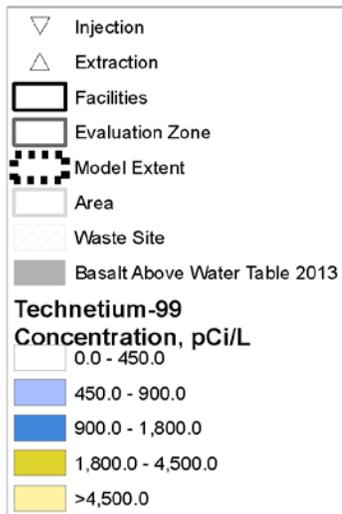
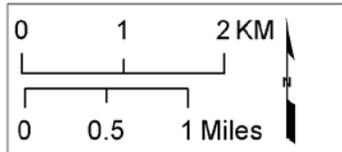
**25 Years
Technetium-99
Scenario 2
Continuing Source**



P2R_FS_tc99_25.png (DoubleFigure_FS.mxd)

Figure B-92 - Plan view contours of the technetium-99 plume at simulation time 25 years based on the scenario 2 simulation with a continuing source term.

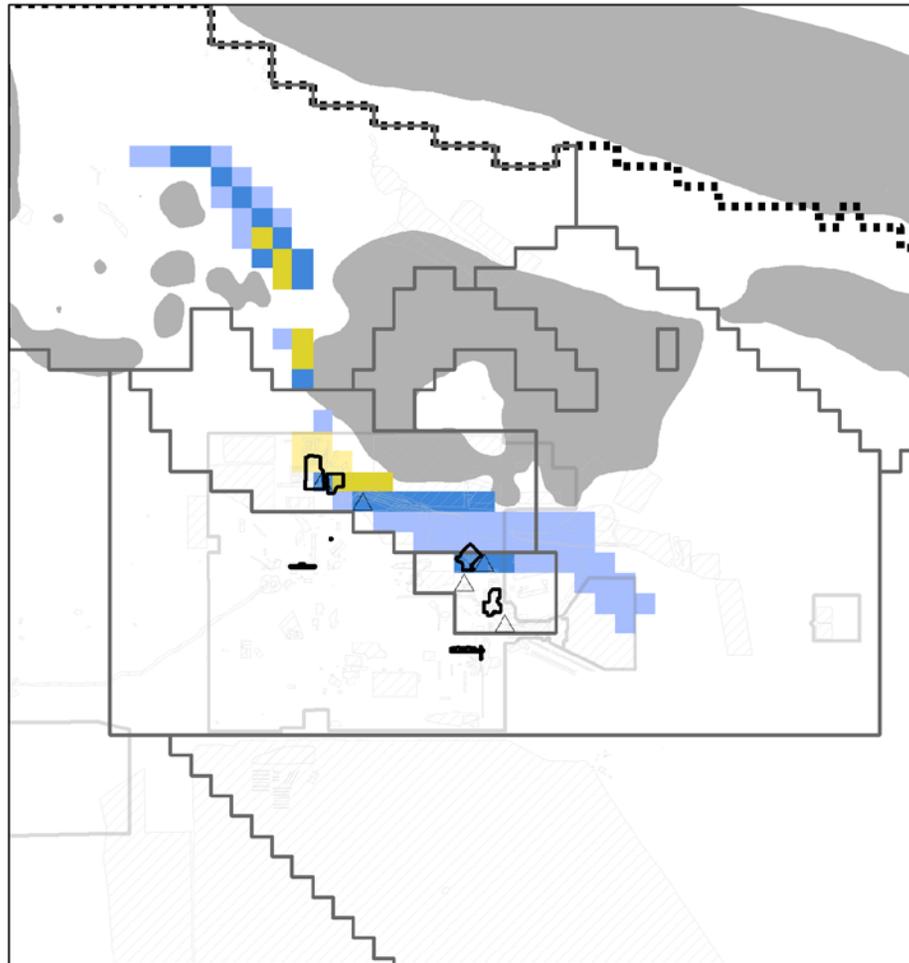
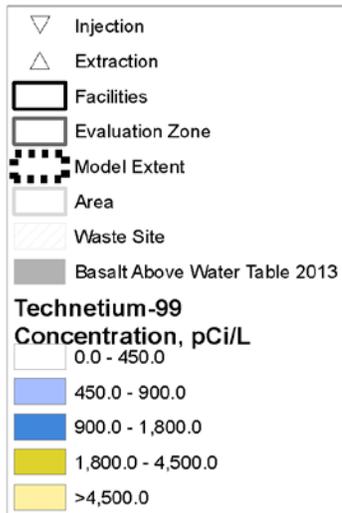
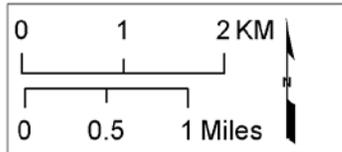
**30 Years
Technetium-99
Scenario 2
Continuing Source**



P2R_FS_tc99_30.png (DoubleFigure_FS.mxd)

Figure B-93 - Plan view contours of the technetium-99 plume at simulation time 30 years based on the scenario 2 simulation with a continuing source term.

**50 Years
Technetium-99
Scenario 2
Continuing Source**



P2R_FS_tc99_50.png (DoubleFigure_FS.mxd)

Figure B-94 - Plan view contours of the technetium-99 plume at simulation time 50 years based on the scenario 2 simulation with a continuing source term.

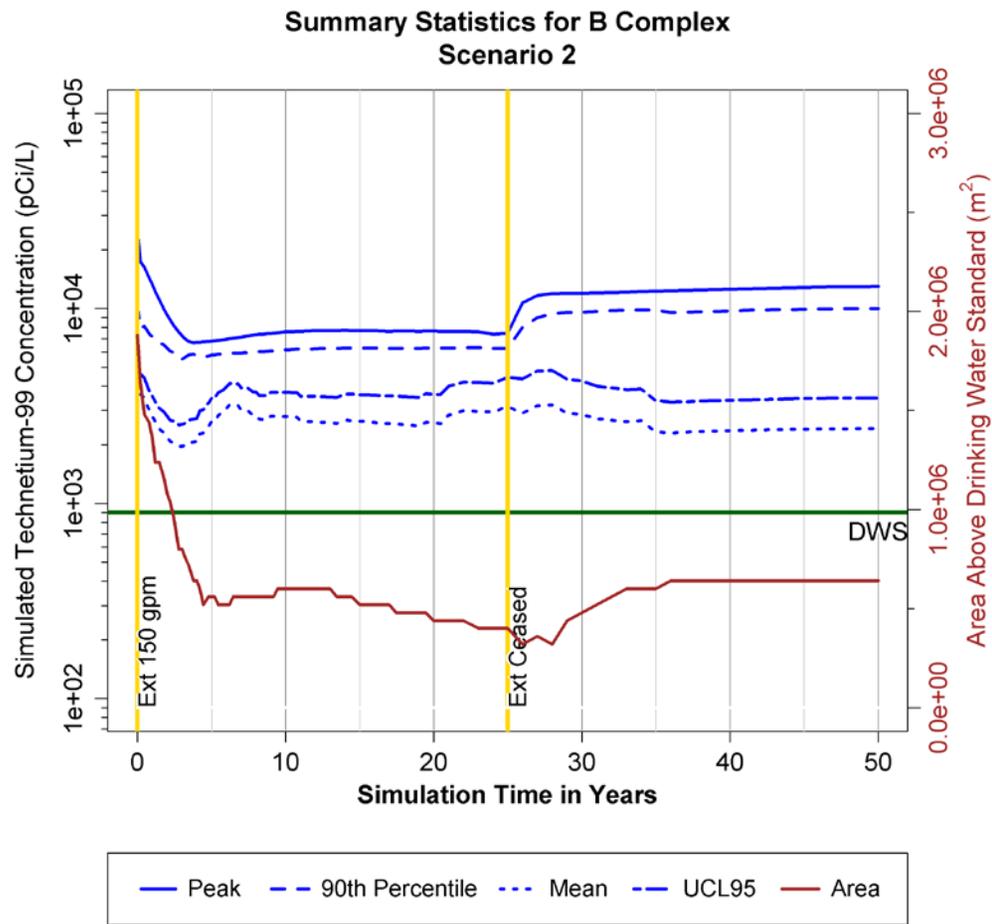


Figure B-95 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 2 simulation with a continuing source term.

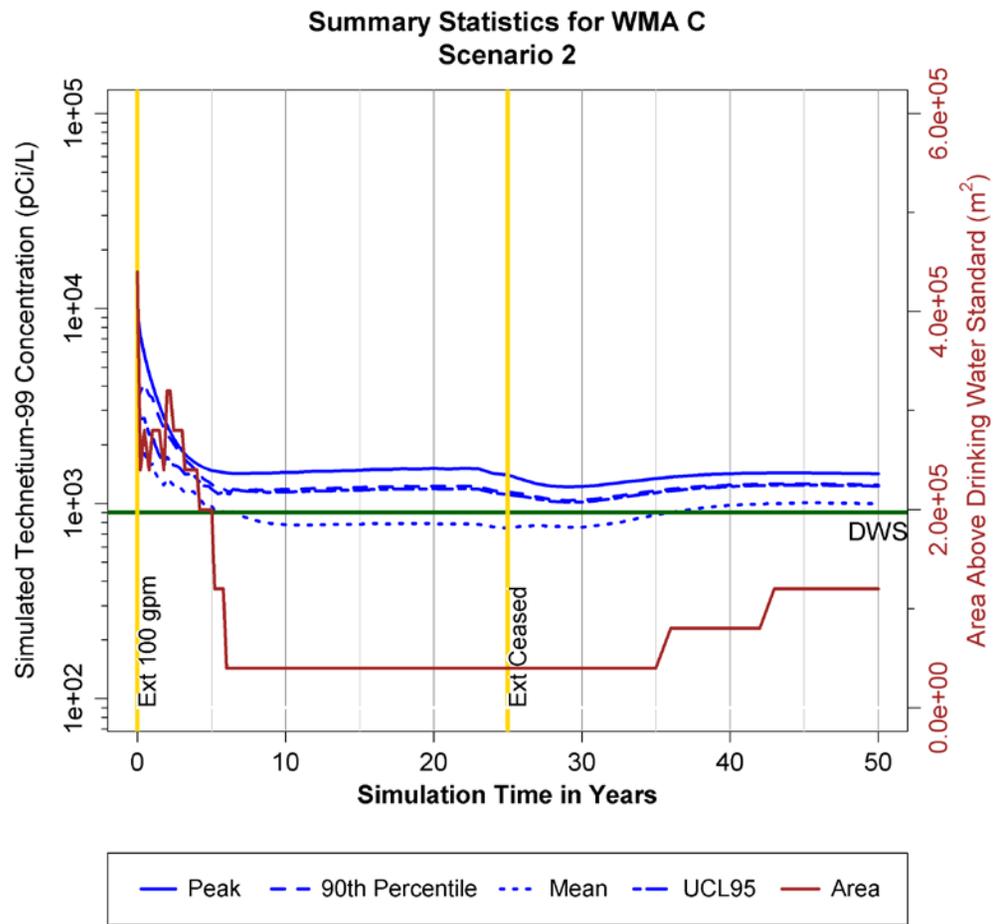


Figure B-96 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 2 simulation with a continuing source term.

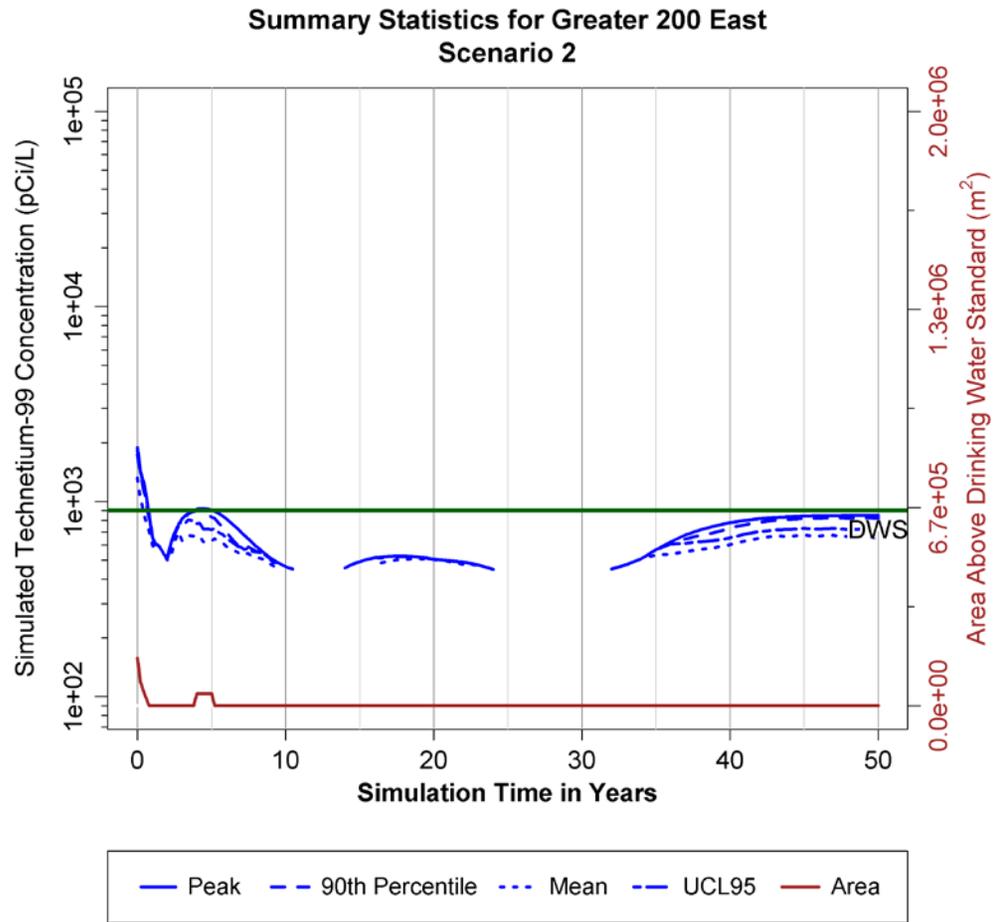


Figure B-97 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 2 simulation with a continuing source term.

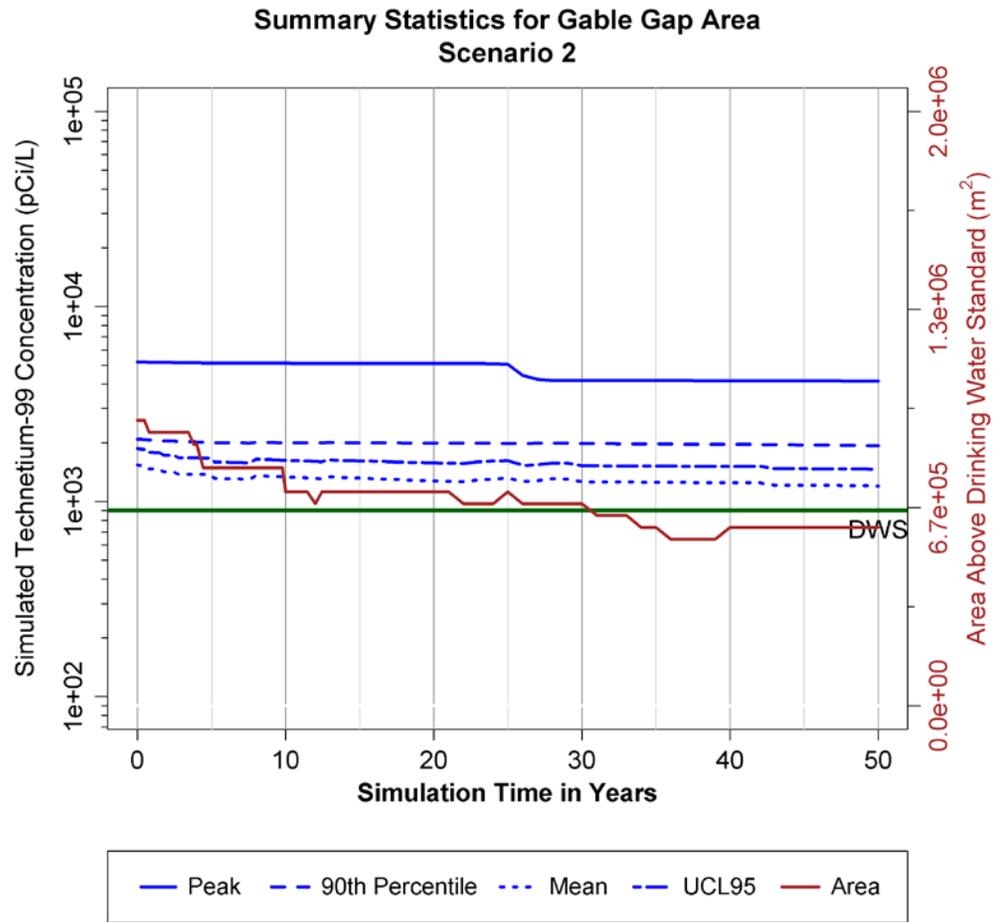
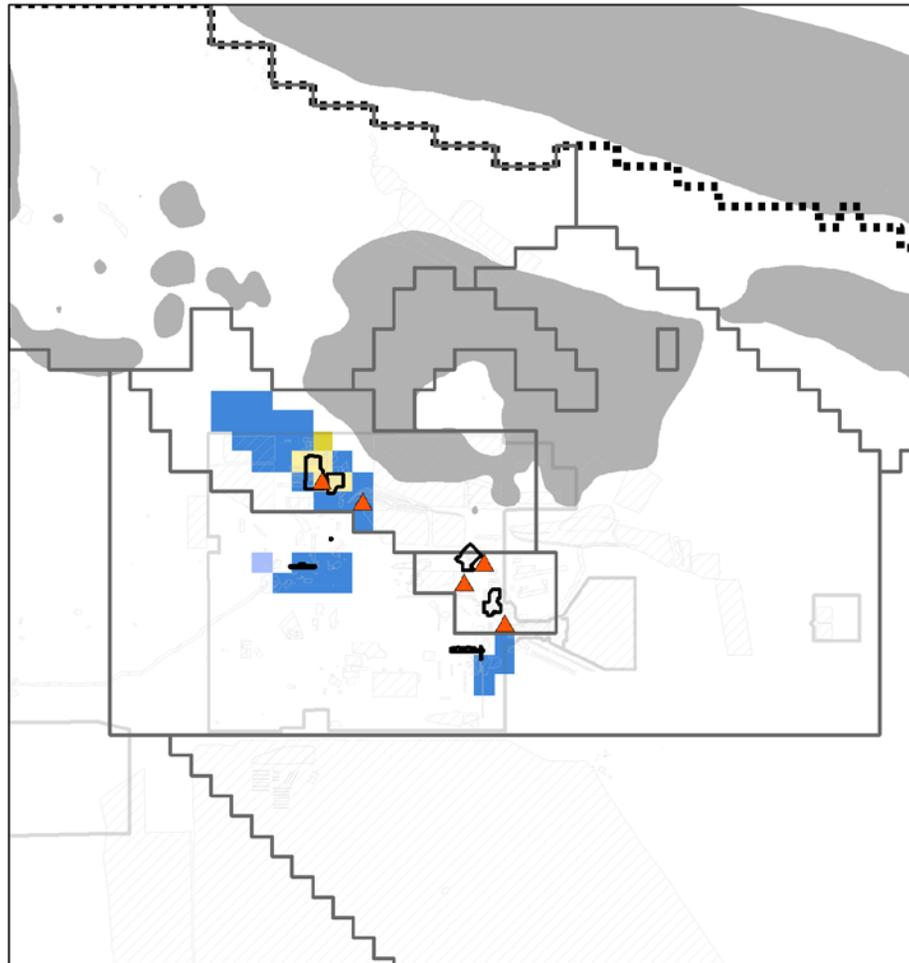
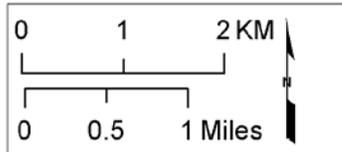


Figure B-98 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 2 simulation with a continuing source term.

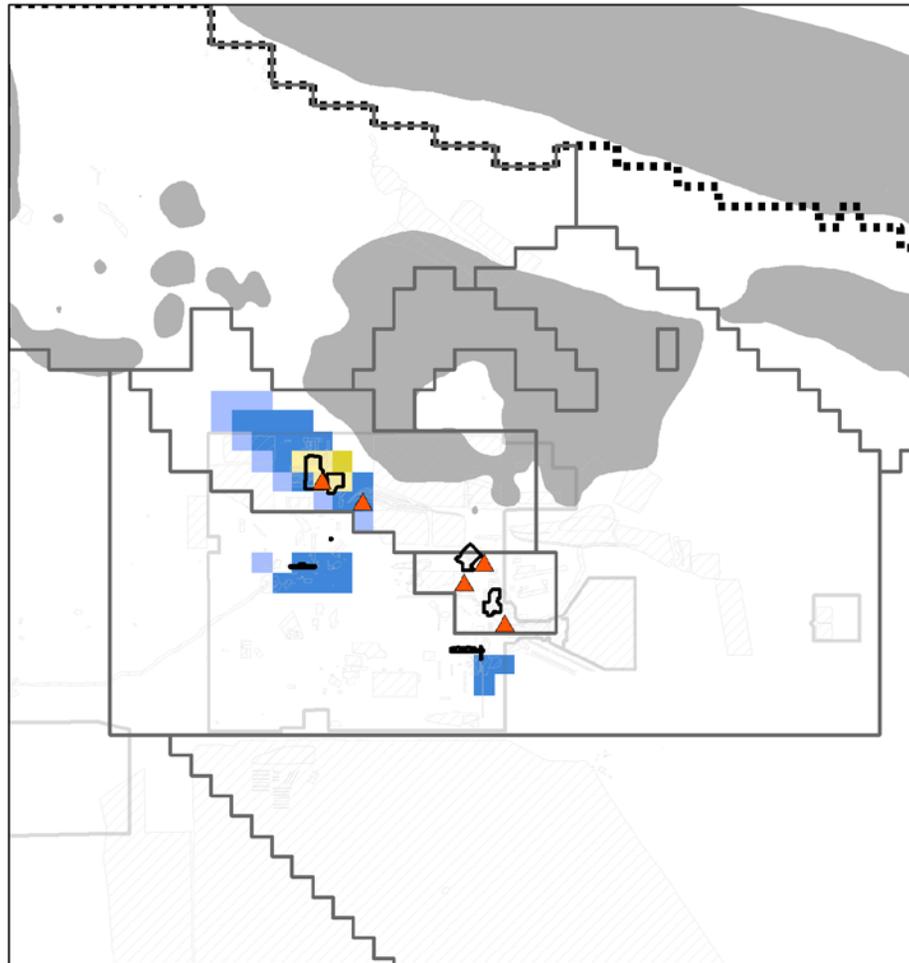
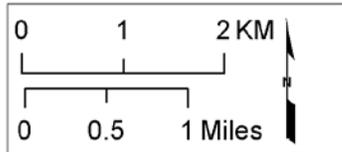
**0 Years
Uranium
Scenario 2
Continuing Source**



P2R_FS_u238_0.png (DoubleFigure_FS.mxd)

Figure B-99 - Plan view contours of the uranium plume at simulation time 0 years based on the scenario 2 simulation with a continuing source term.

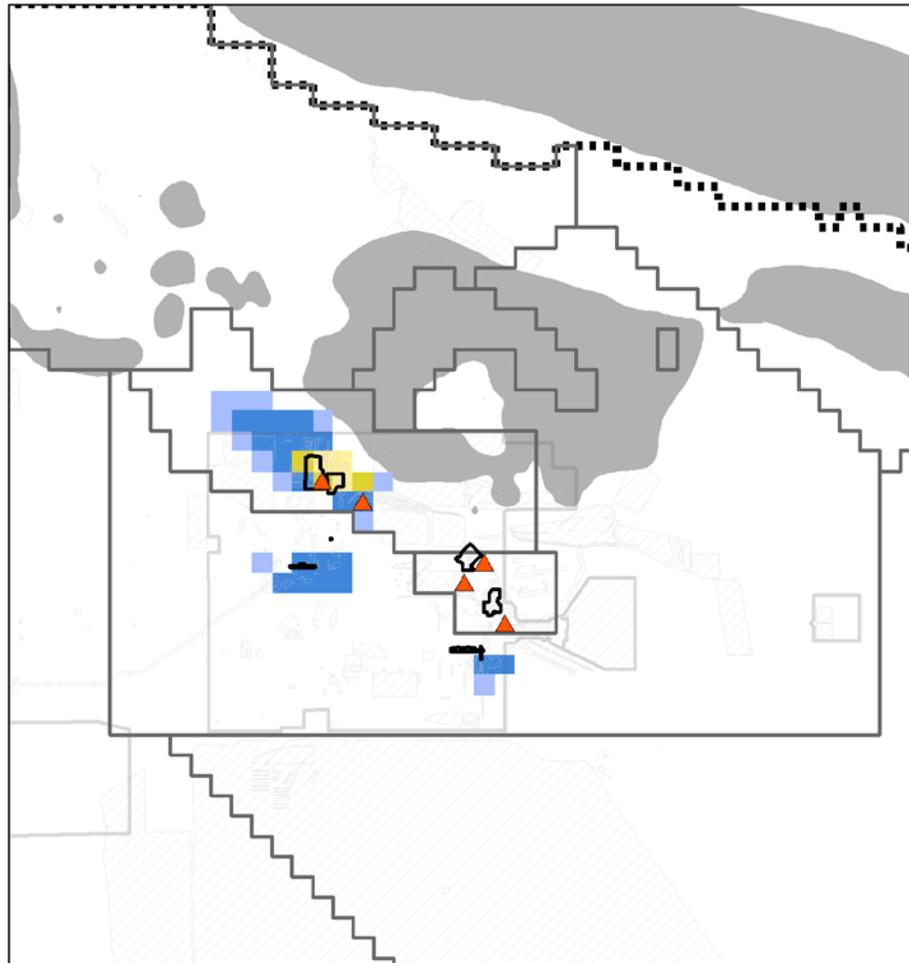
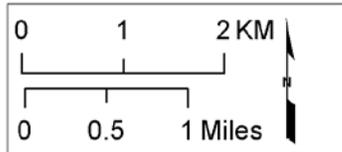
**1 Years
Uranium
Scenario 2
Continuing Source**



P2R_FS_u238_1.png (DoubleFigure_FS.mxd)

Figure B-100 - Plan view contours of the uranium plume at simulation time 1 years based on the scenario 2 simulation with a continuing source term.

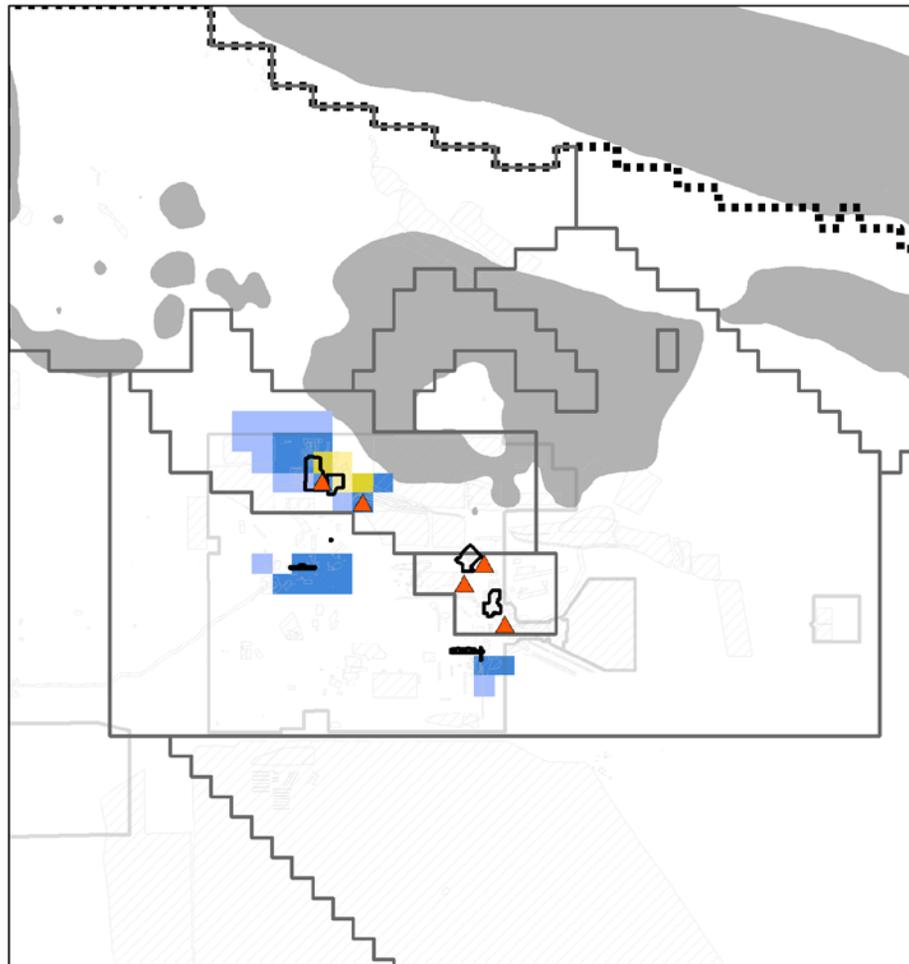
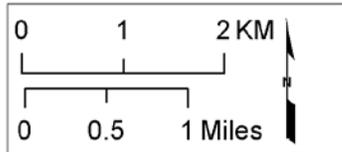
**2 Years
Uranium
Scenario 2
Continuing Source**



P2R_FS_u238_2.png (DoubleFigure_FS.mxd)

Figure B-101 - Plan view contours of the uranium plume at simulation time 2 years based on the scenario 2 simulation with a continuing source term.

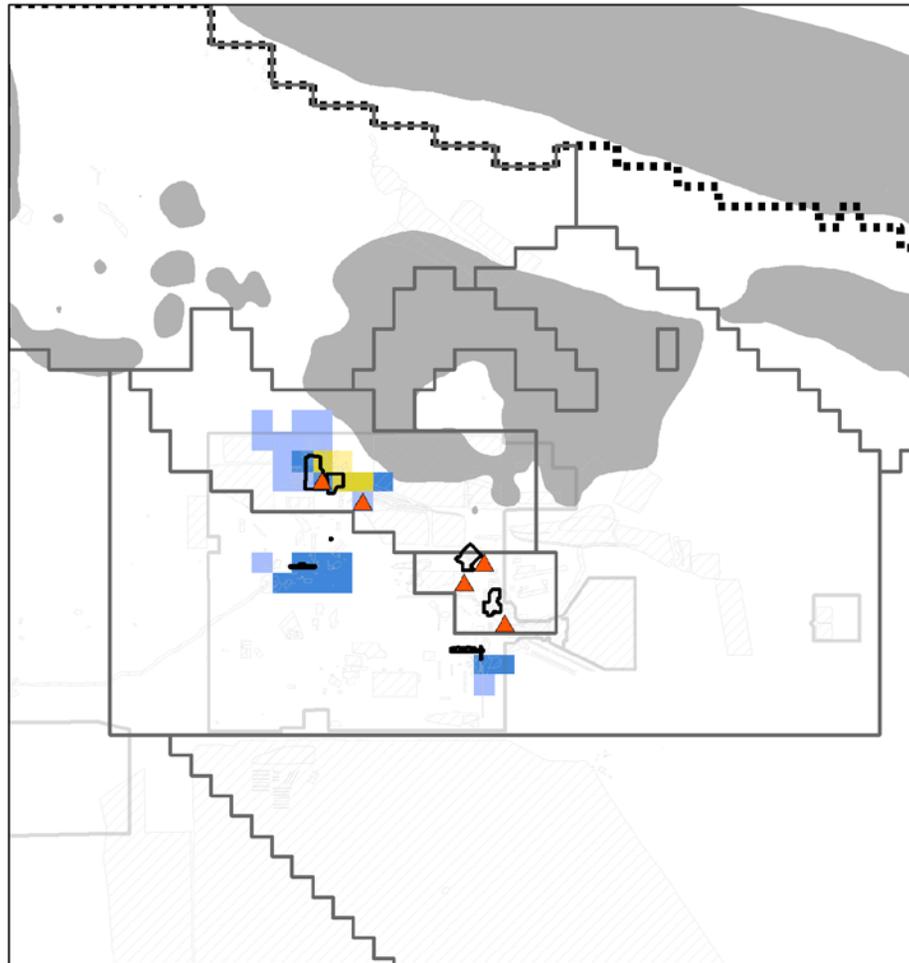
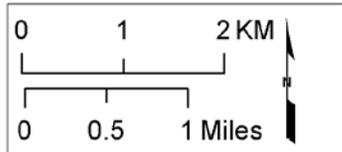
**5 Years
Uranium
Scenario 2
Continuing Source**



P2R_FS_u238_5.png (DoubleFigure_FS.mxd)

Figure B-102 - Plan view contours of the uranium plume at simulation time 5 years based on the scenario 2 simulation with a continuing source term.

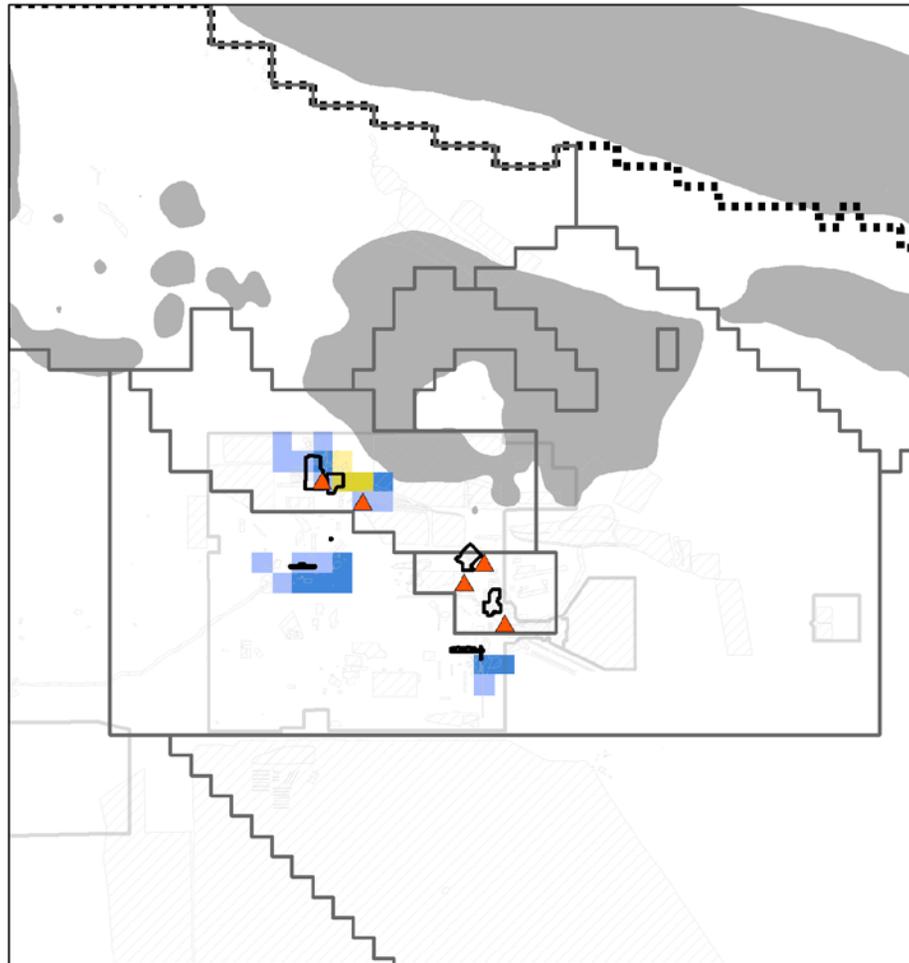
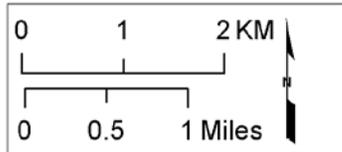
**10 Years
Uranium
Scenario 2
Continuing Source**



P2R_FS_u238_10.png (DoubleFigure_FS.mxd)

Figure B-103 - Plan view contours of the uranium plume at simulation time 10 years based on the scenario 2 simulation with a continuing source term.

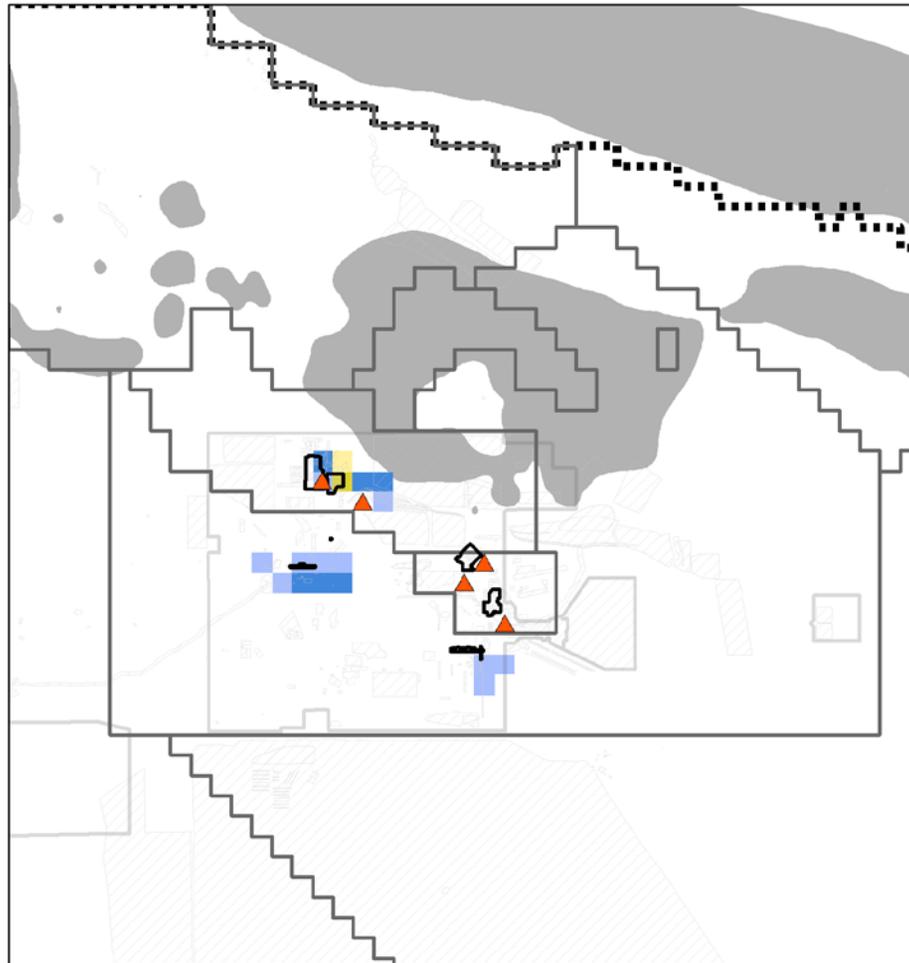
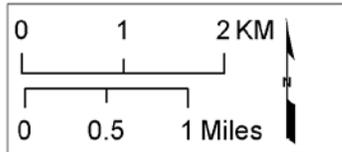
**15 Years
Uranium
Scenario 2
Continuing Source**



P2R_FS_u238_15.png (DoubleFigure_FS.mxd)

Figure B-104 - Plan view contours of the uranium plume at simulation time 15 years based on the scenario 2 simulation with a continuing source term.

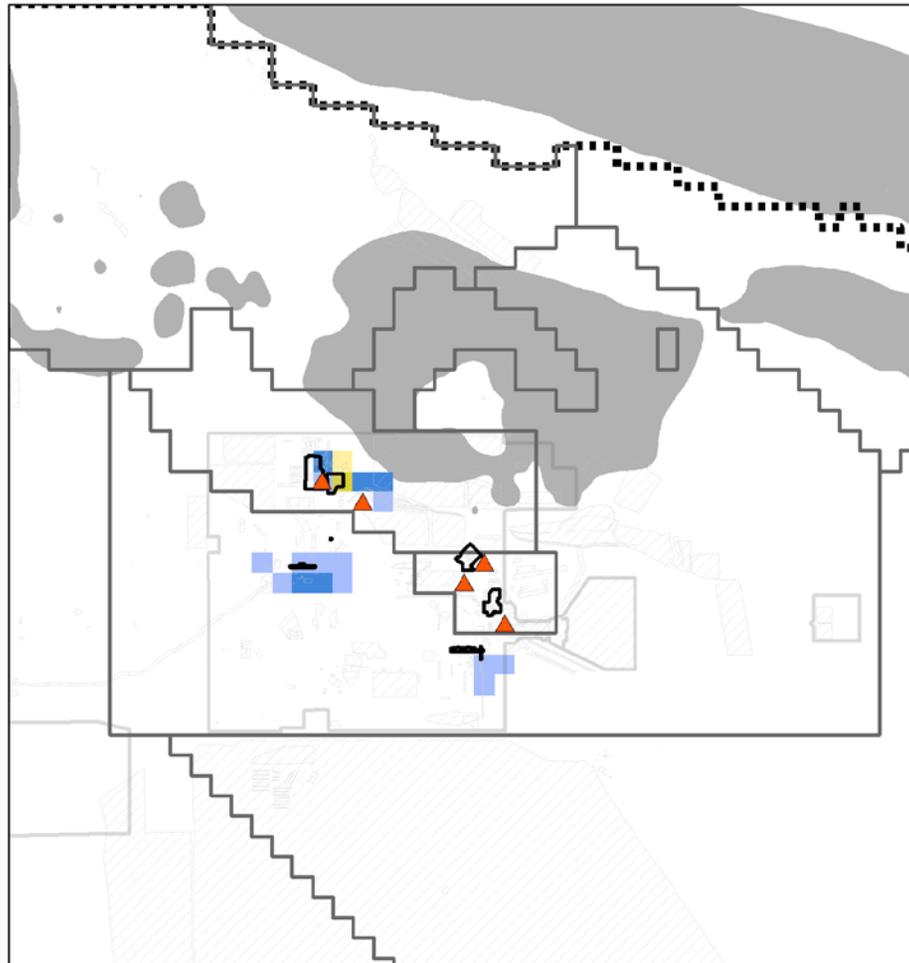
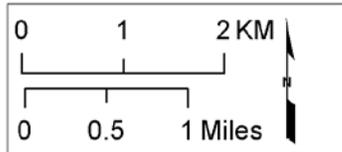
**20 Years
Uranium
Scenario 2
Continuing Source**



P2R_FS_u238_20.png (DoubleFigure_FS.mxd)

Figure B-105 - Plan view contours of the uranium plume at simulation time 20 years based on the scenario 2 simulation with a continuing source term.

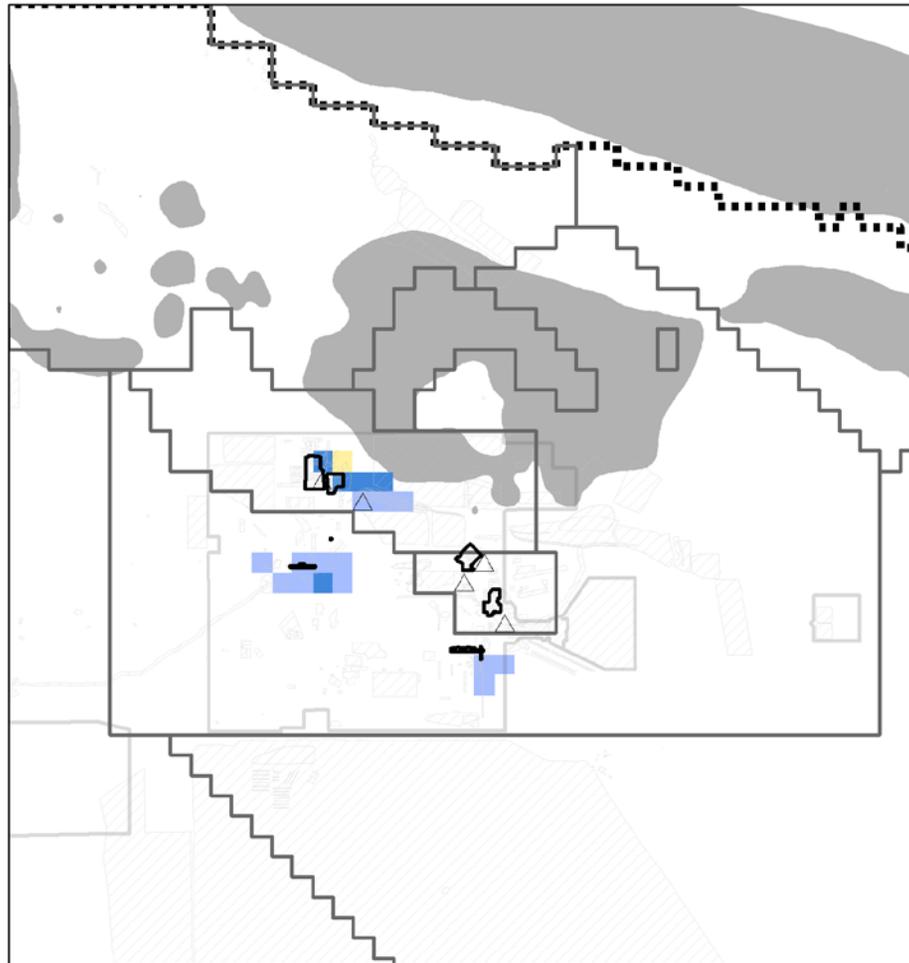
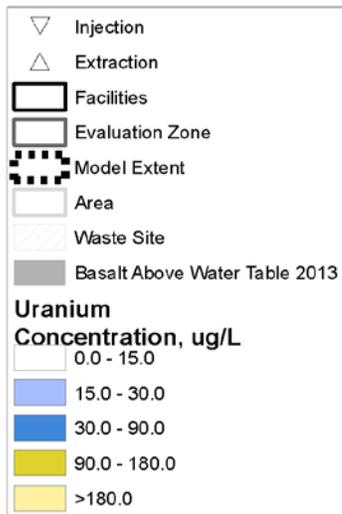
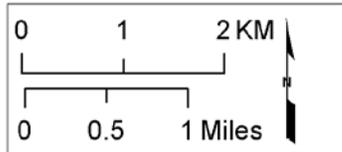
**25 Years
Uranium
Scenario 2
Continuing Source**



P2R_FS_u238_25.png (DoubleFigure_FS.mxd)

Figure B-106 - Plan view contours of the uranium plume at simulation time 25 years based on the scenario 2 simulation with a continuing source term.

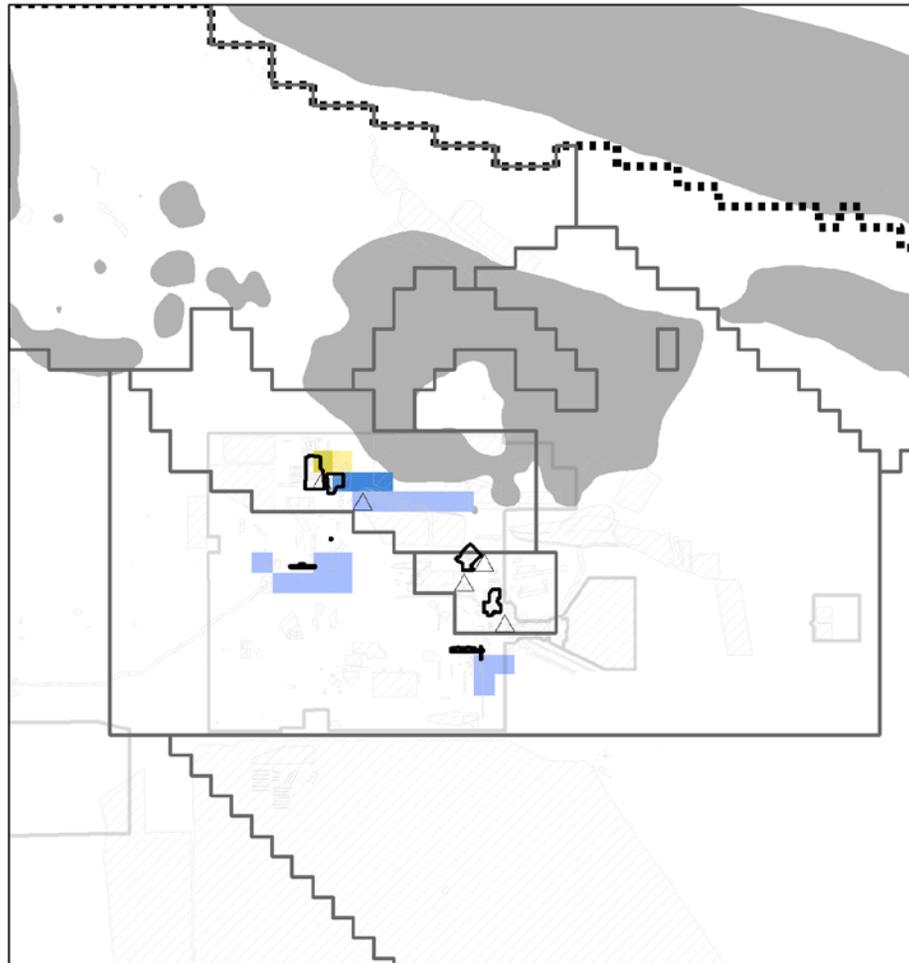
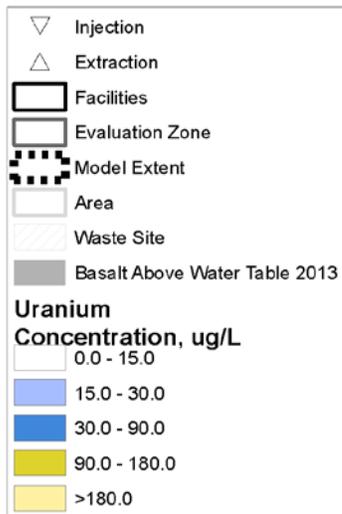
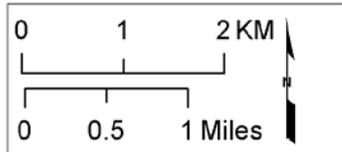
**30 Years
Uranium
Scenario 2
Continuing Source**



P2R_FS_u238_30.png (DoubleFigure_FS.mxd)

Figure B-107 - Plan view contours of the uranium plume at simulation time 30 years based on the scenario 2 simulation with a continuing source term.

**50 Years
Uranium
Scenario 2
Continuing Source**



P2R_FS_u238_50.png (DoubleFigure_FS.mxd)

Figure B-108 - Plan view contours of the uranium plume at simulation time 50 years based on the scenario 2 simulation with a continuing source term.

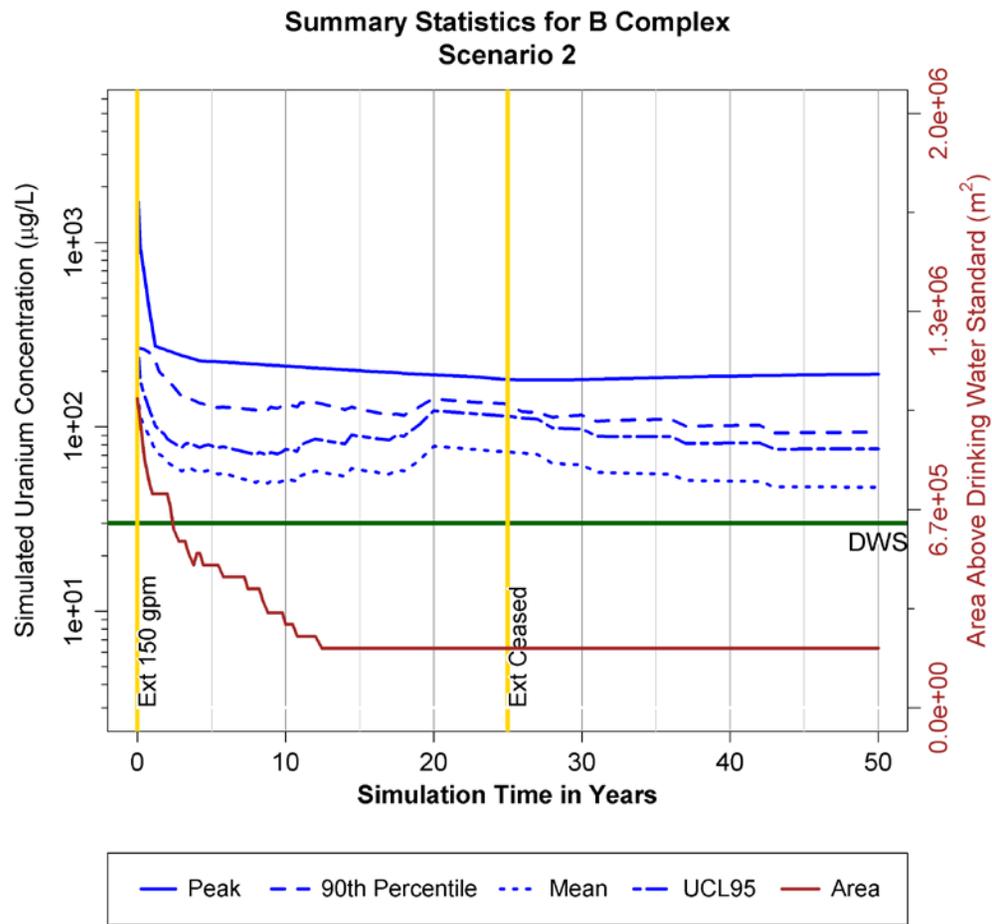


Figure B-109 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 2 simulation with a continuing source term.

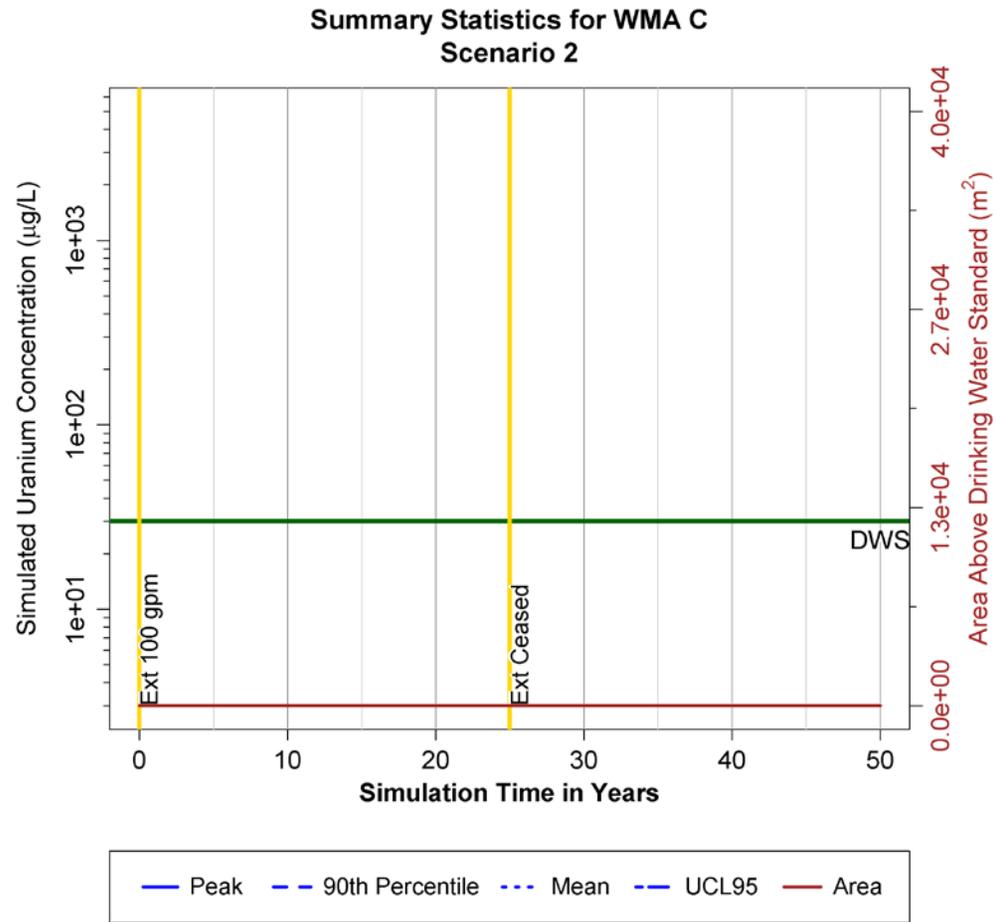


Figure B-110 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 2 simulation with a continuing source term.

Summary Statistics for Greater 200 East
Scenario 2

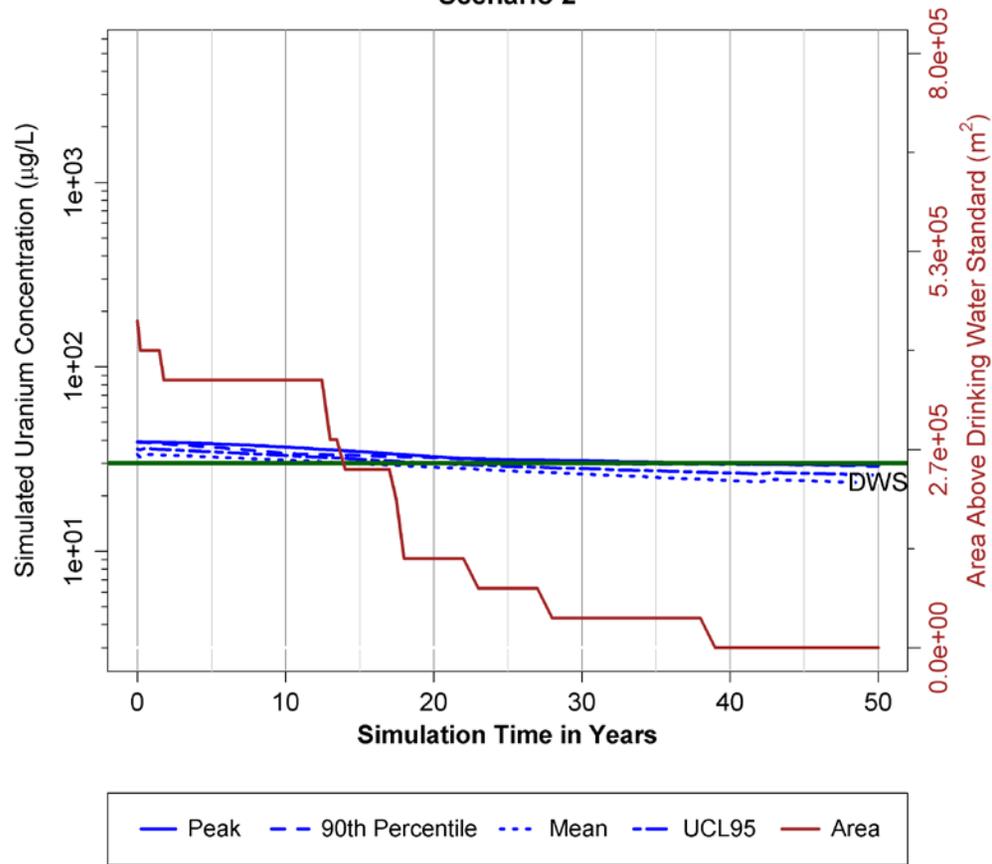


Figure B-111 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 2 simulation with a continuing source term.

Summary Statistics for Gable Gap Area Scenario 2

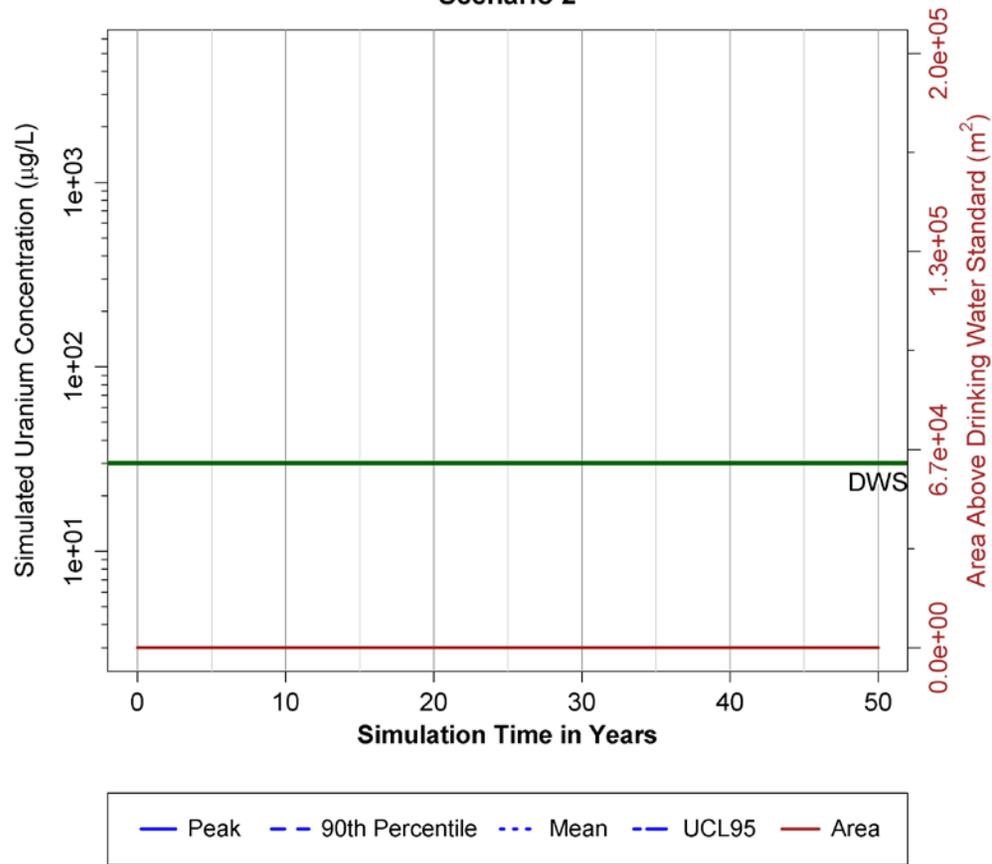
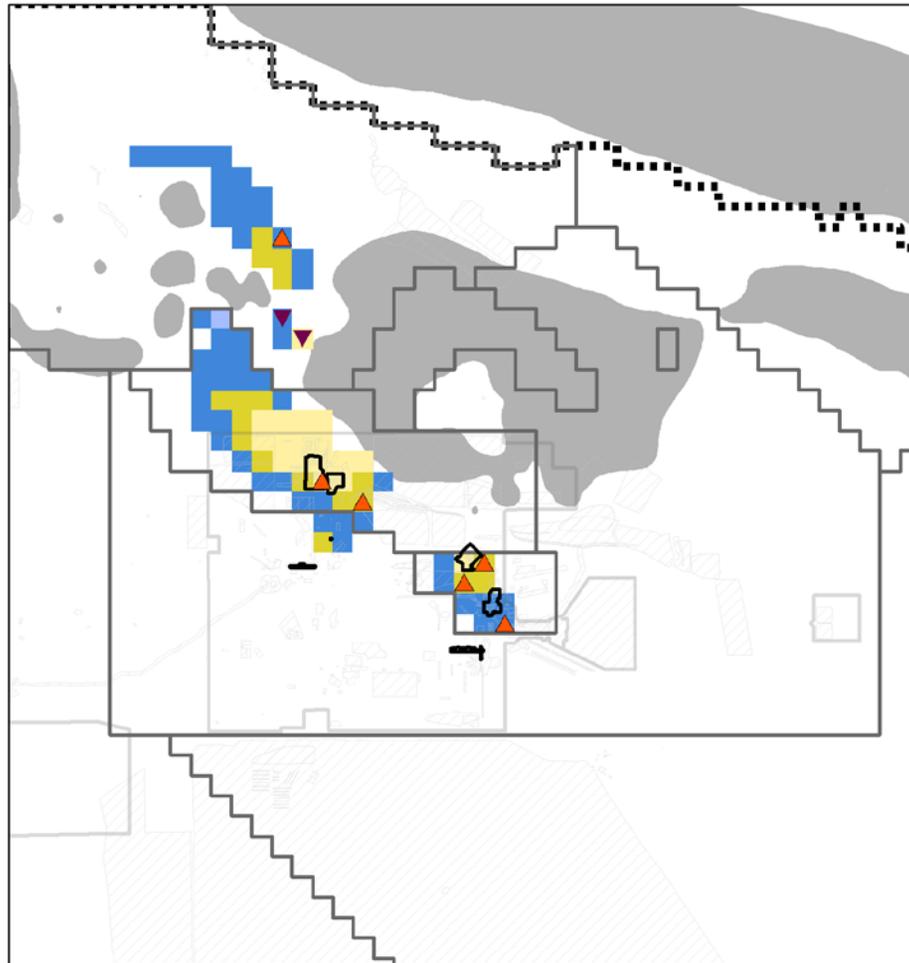
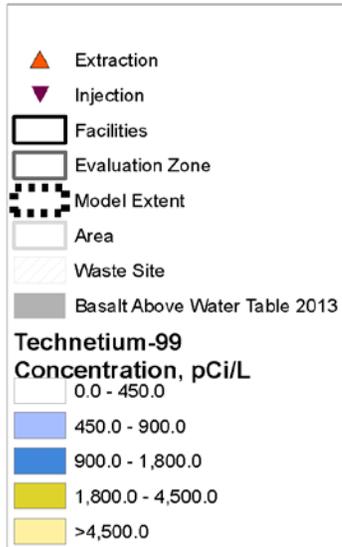
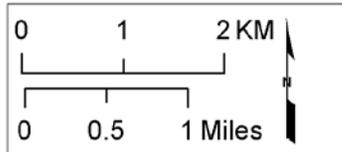


Figure B-112 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 2 simulation with a continuing source term.

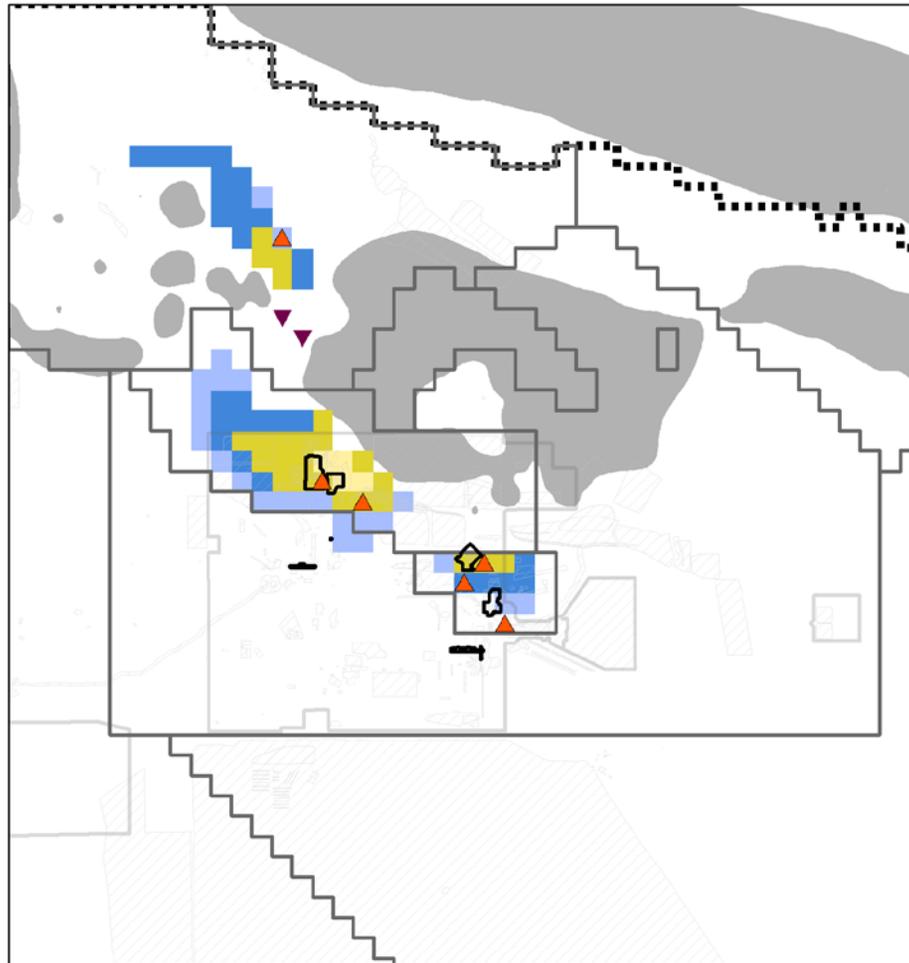
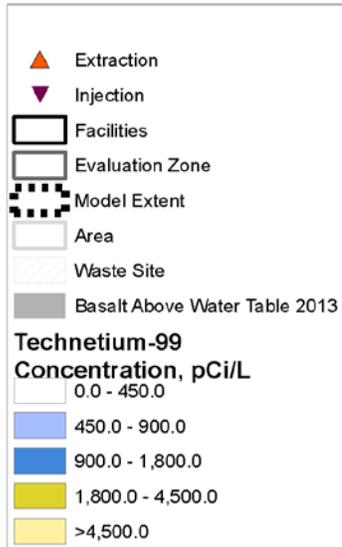
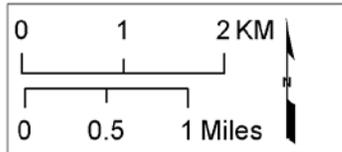
**0 Years
Technetium-99
Scenario 3**



P2R_FS_tc99_0.png (DoubleFigure_FS.mxd)

Figure B-113 - Plan view contours of the technetium-99 plume at simulation time 0 years based on the scenario 3 simulation.

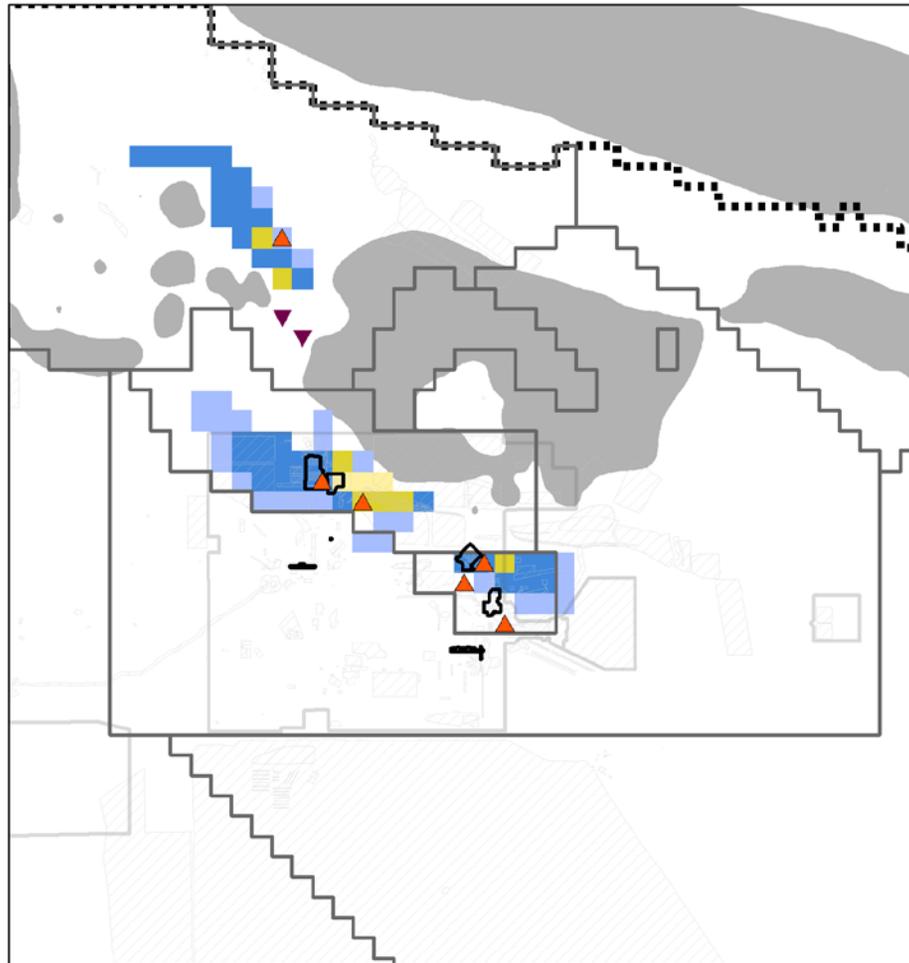
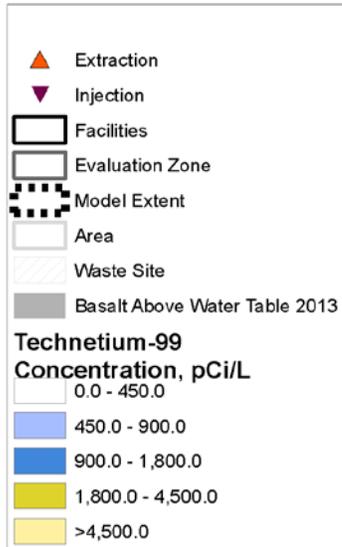
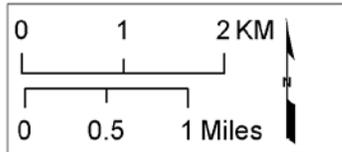
**1 Years
Technetium-99
Scenario 3**



P2R_FS_tc99_1.png (DoubleFigure_FS.mxd)

Figure B-114 - Plan view contours of the technetium-99 plume at simulation time 1 years based on the scenario 3 simulation.

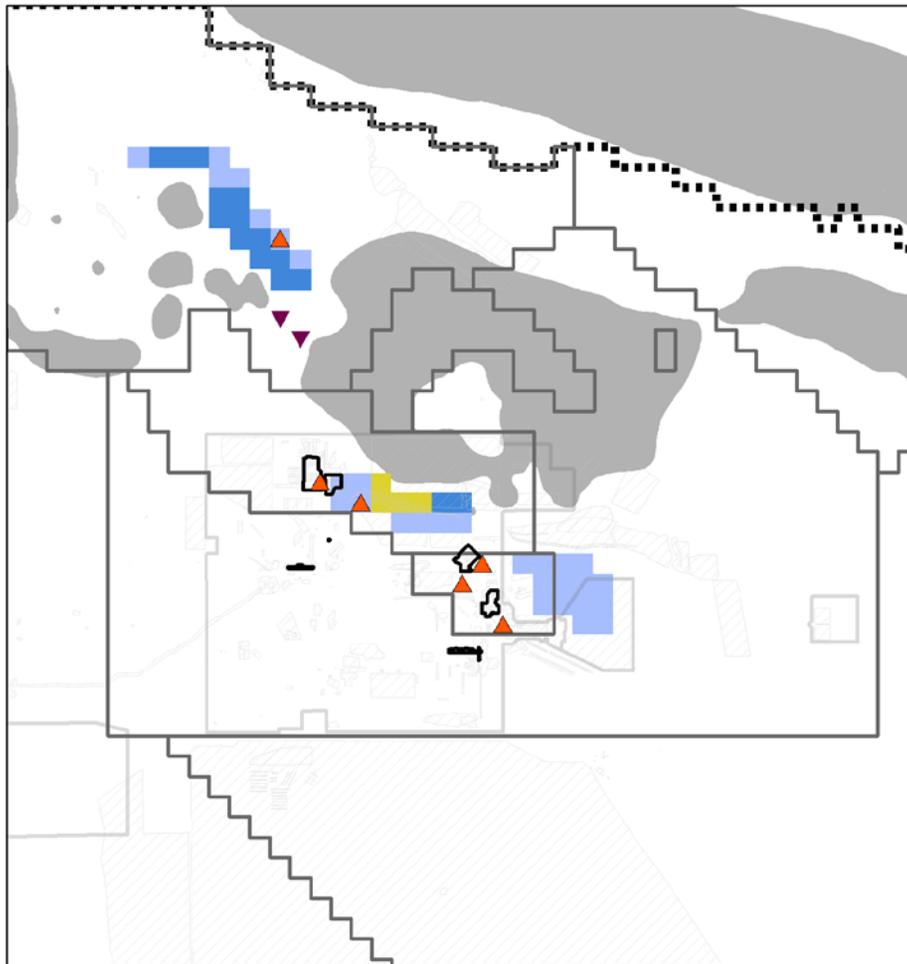
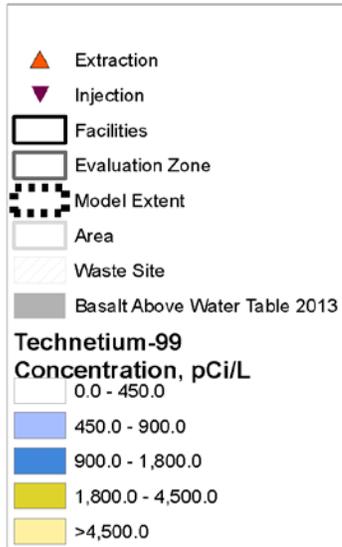
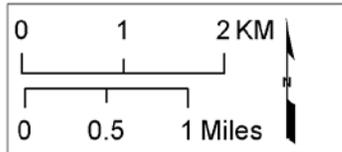
**2 Years
Technetium-99
Scenario 3**



P2R_FS_tc99_2.png (DoubleFigure_FS.mxd)

Figure B-115 - Plan view contours of the technetium-99 plume at simulation time 2 years based on the scenario 3 simulation.

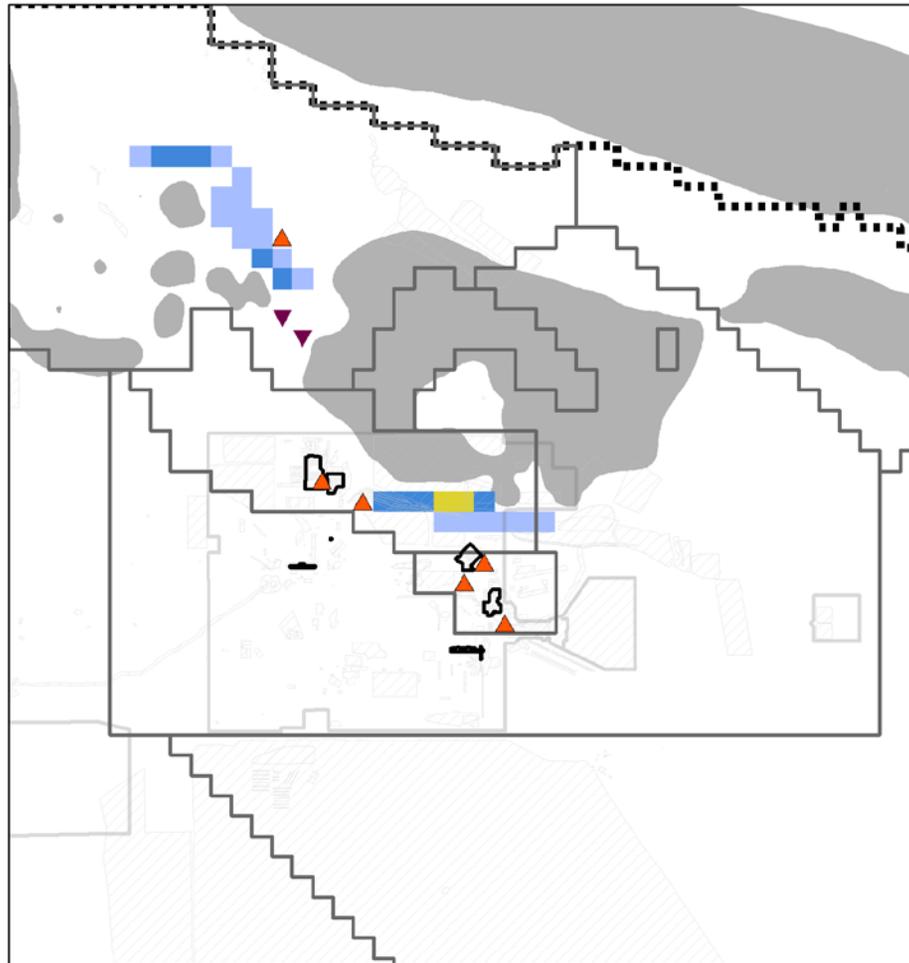
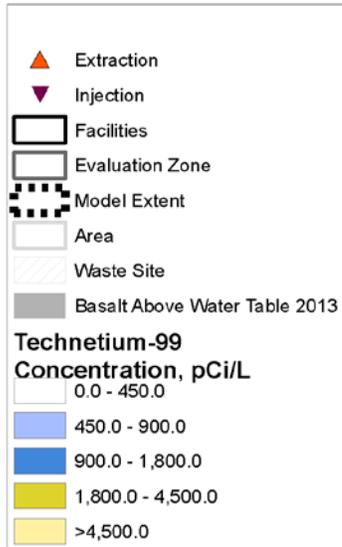
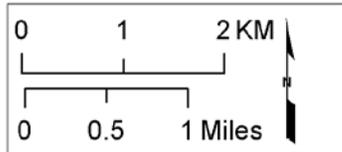
**5 Years
Technetium-99
Scenario 3**



P2R_FS_tc99_5.png (DoubleFigure_FS.mxd)

Figure B-116 - Plan view contours of the technetium-99 plume at simulation time 5 years based on the scenario 3 simulation.

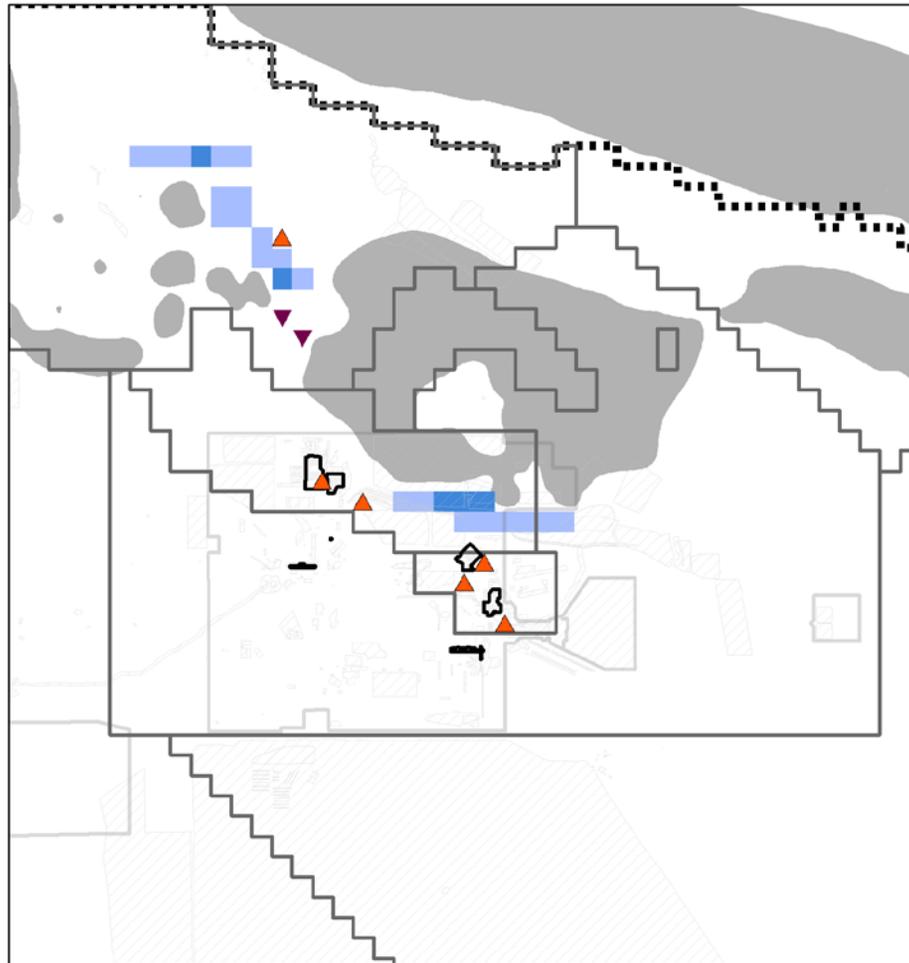
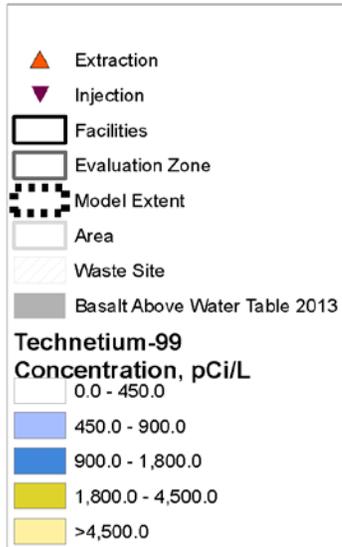
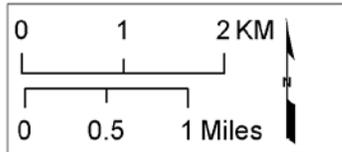
**10 Years
Technetium-99
Scenario 3**



P2R_FS_tc99_10.png (DoubleFigure_FS.mxd)

Figure B-117 - Plan view contours of the technetium-99 plume at simulation time 10 years based on the scenario 3 simulation.

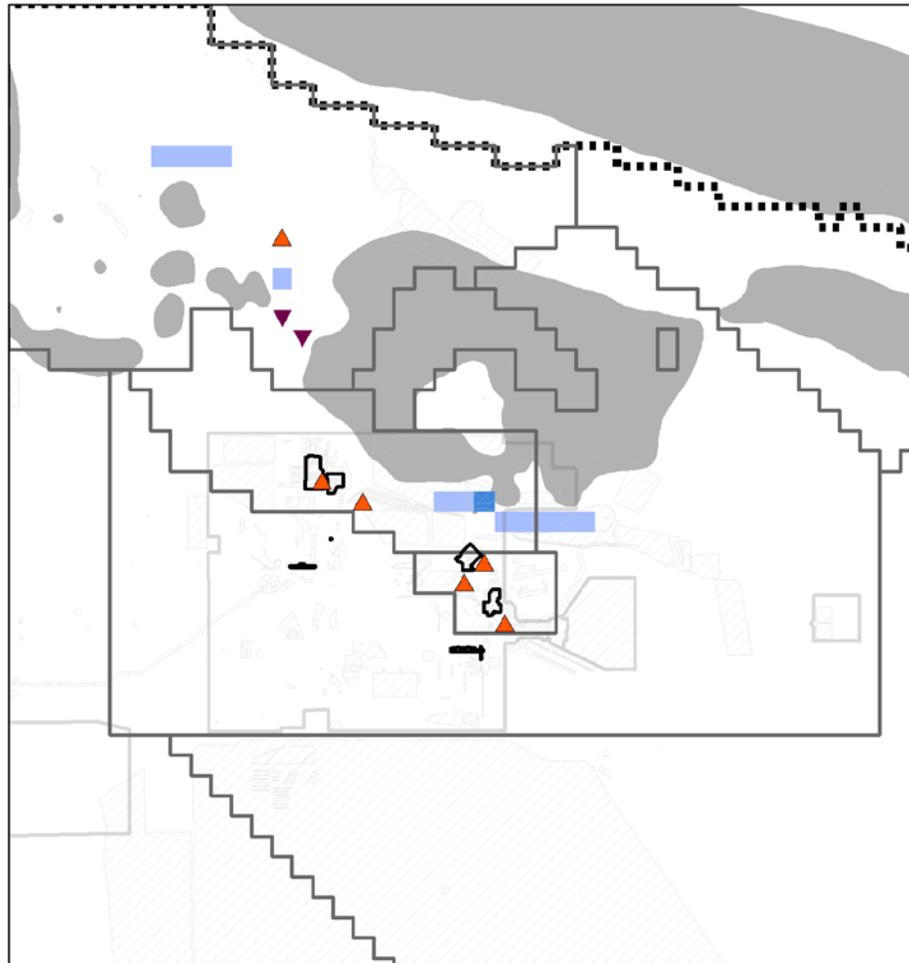
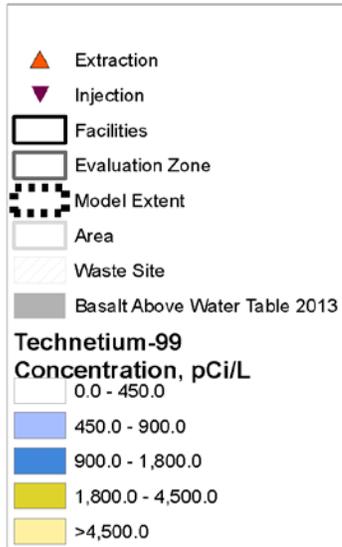
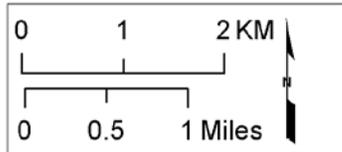
**15 Years
Technetium-99
Scenario 3**



P2R_FS_tc99_15.png (DoubleFigure_FS.mxd)

Figure B-118 - Plan view contours of the technetium-99 plume at simulation time 15 years based on the scenario 3 simulation.

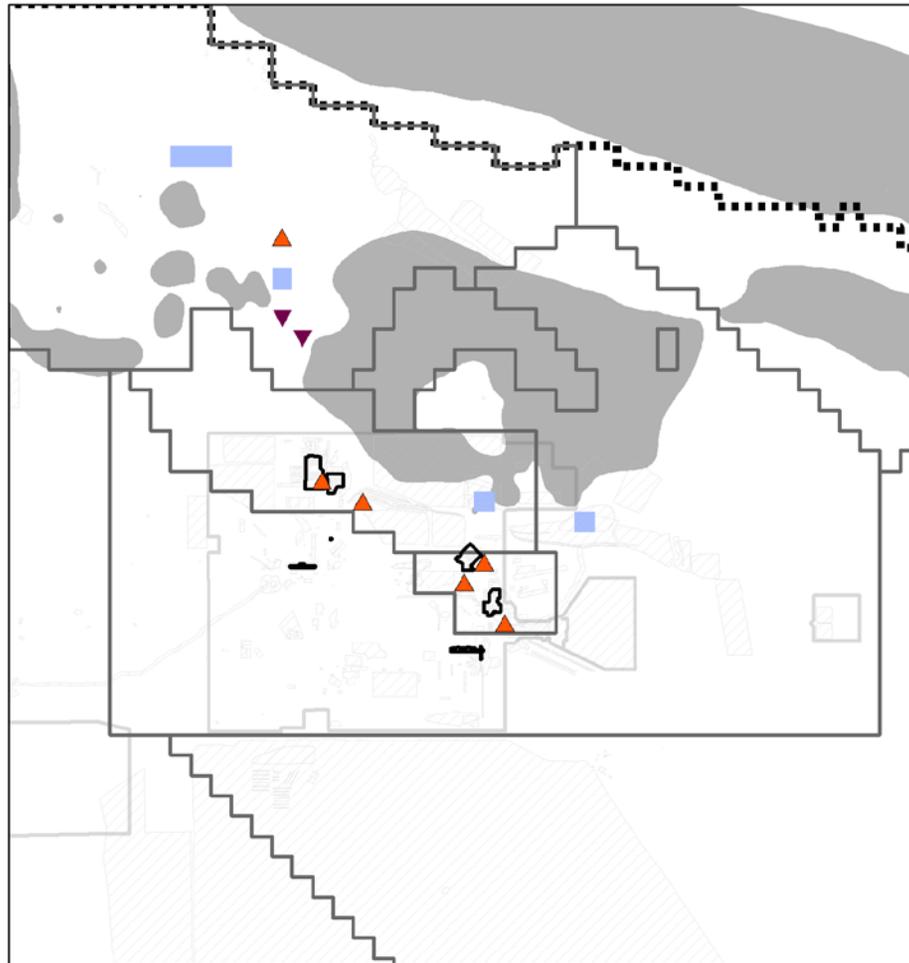
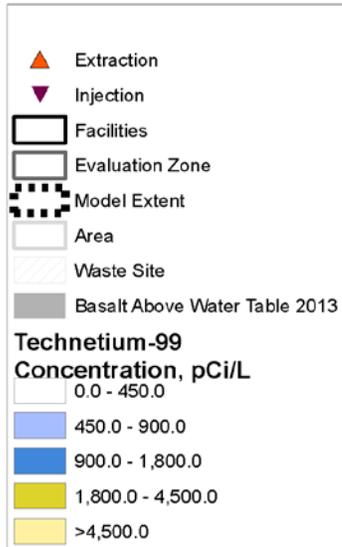
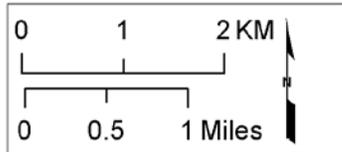
**20 Years
Technetium-99
Scenario 3**



P2R_FS_tc99_20.png (DoubleFigure_FS.mxd)

Figure B-119 - Plan view contours of the technetium-99 plume at simulation time 20 years based on the scenario 3 simulation.

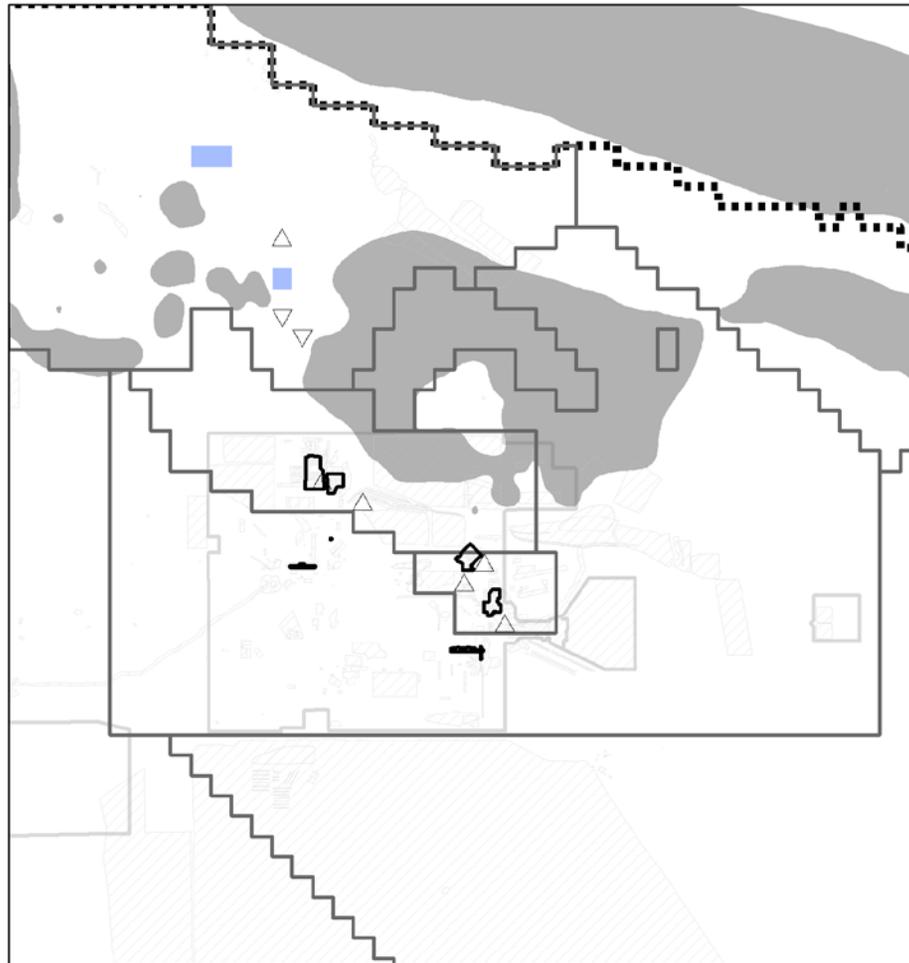
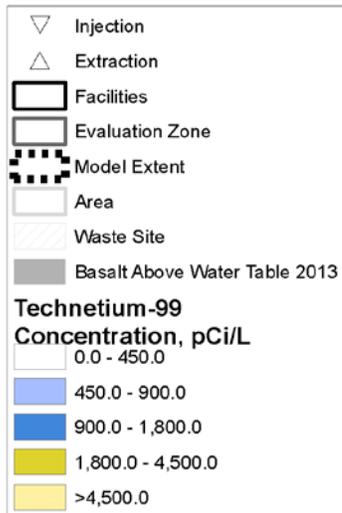
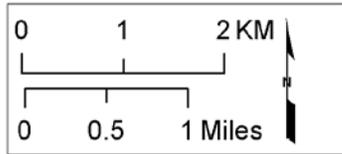
**25 Years
Technetium-99
Scenario 3**



P2R_FS_tc99_25.png (DoubleFigure_FS.mxd)

Figure B-120 - Plan view contours of the technetium-99 plume at simulation time 25 years based on the scenario 3 simulation.

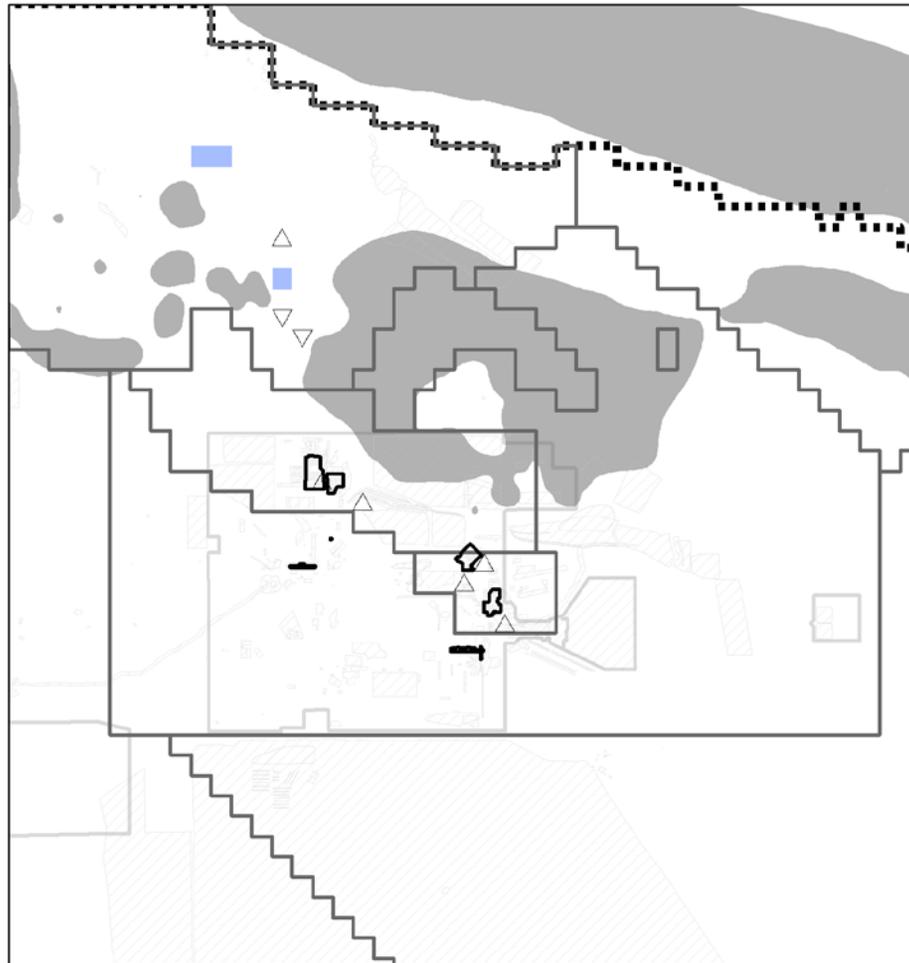
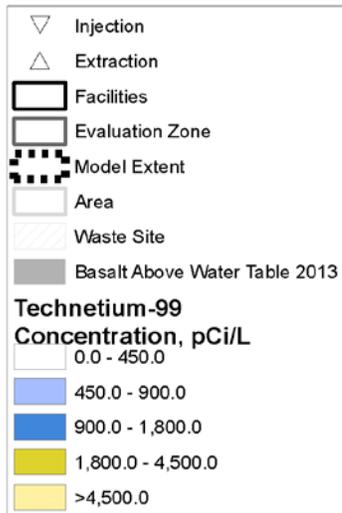
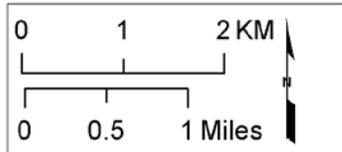
**30 Years
Technetium-99
Scenario 3**



P2R_FS_tc99_30.png (DoubleFigure_FS.mxd)

Figure B-121 - Plan view contours of the technetium-99 plume at simulation time 30 years based on the scenario 3 simulation.

**50 Years
Technetium-99
Scenario 3**



P2R_FS_tc99_50.png (DoubleFigure_FS.mxd)

Figure B-122 - Plan view contours of the technetium-99 plume at simulation time 50 years based on the scenario 3 simulation.

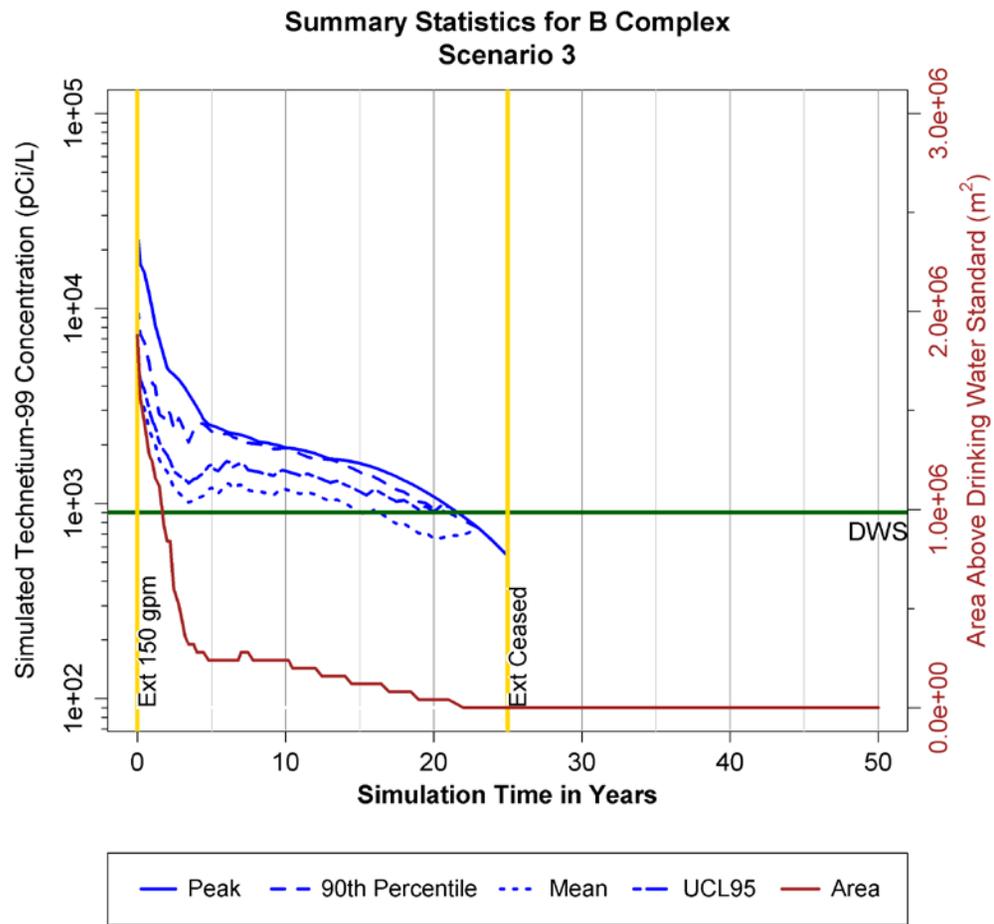


Figure B-123 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 3 simulation.

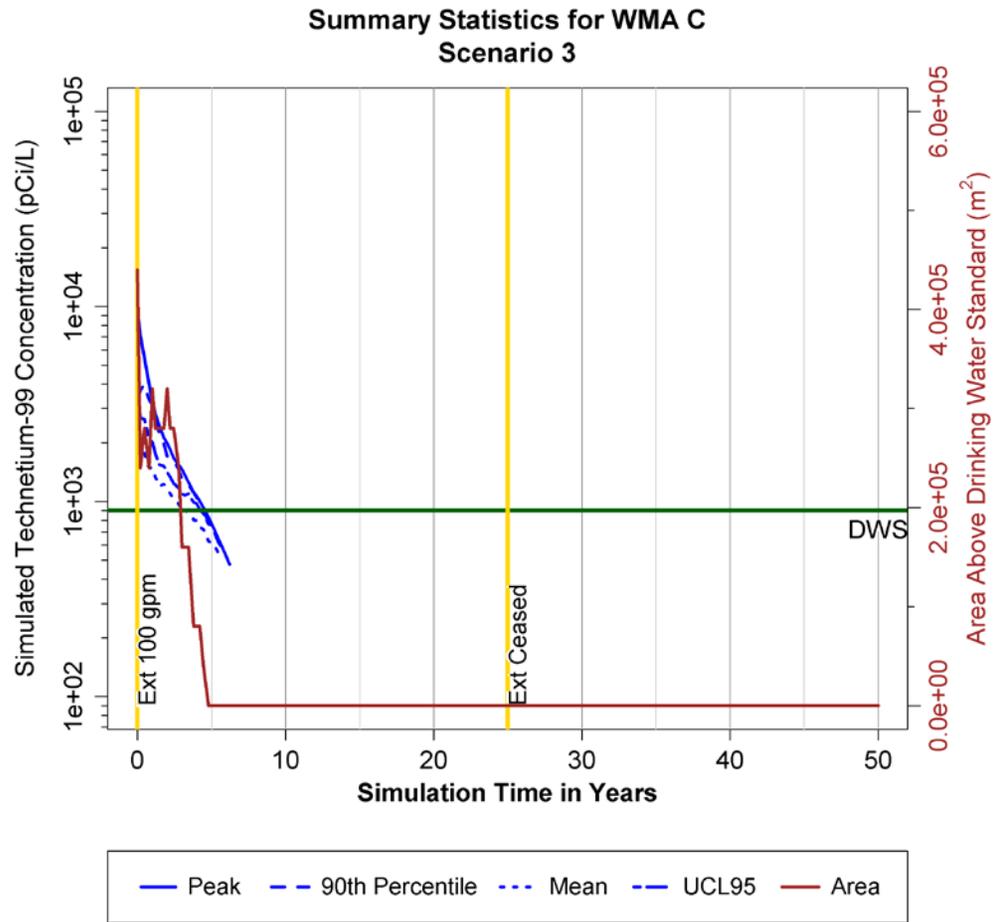


Figure B-124 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 3 simulation.

Summary Statistics for Greater 200 East
Scenario 3

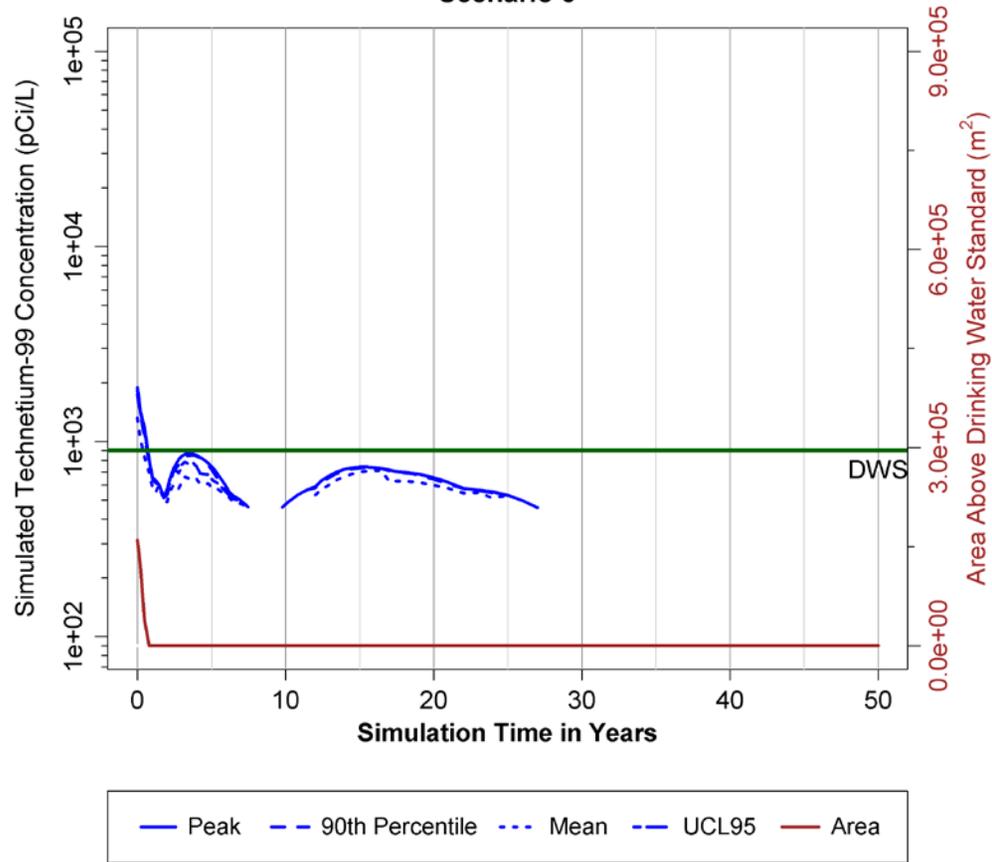


Figure B-125 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 3 simulation.

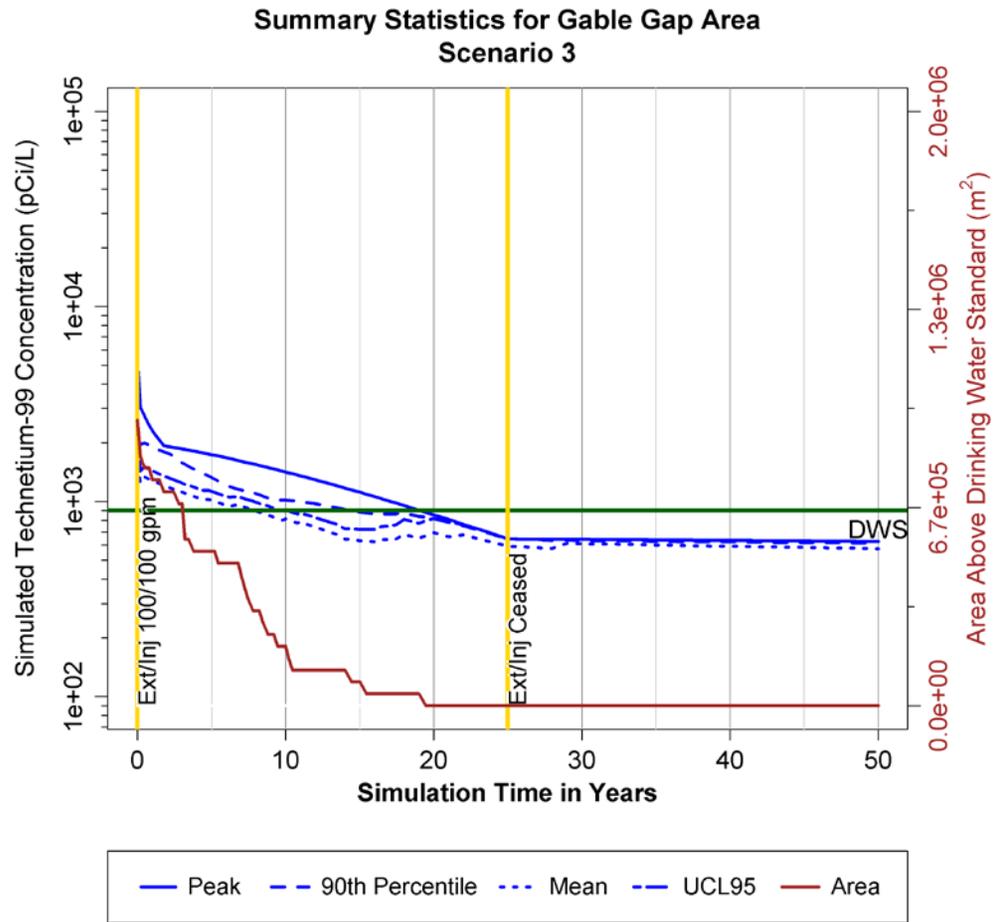
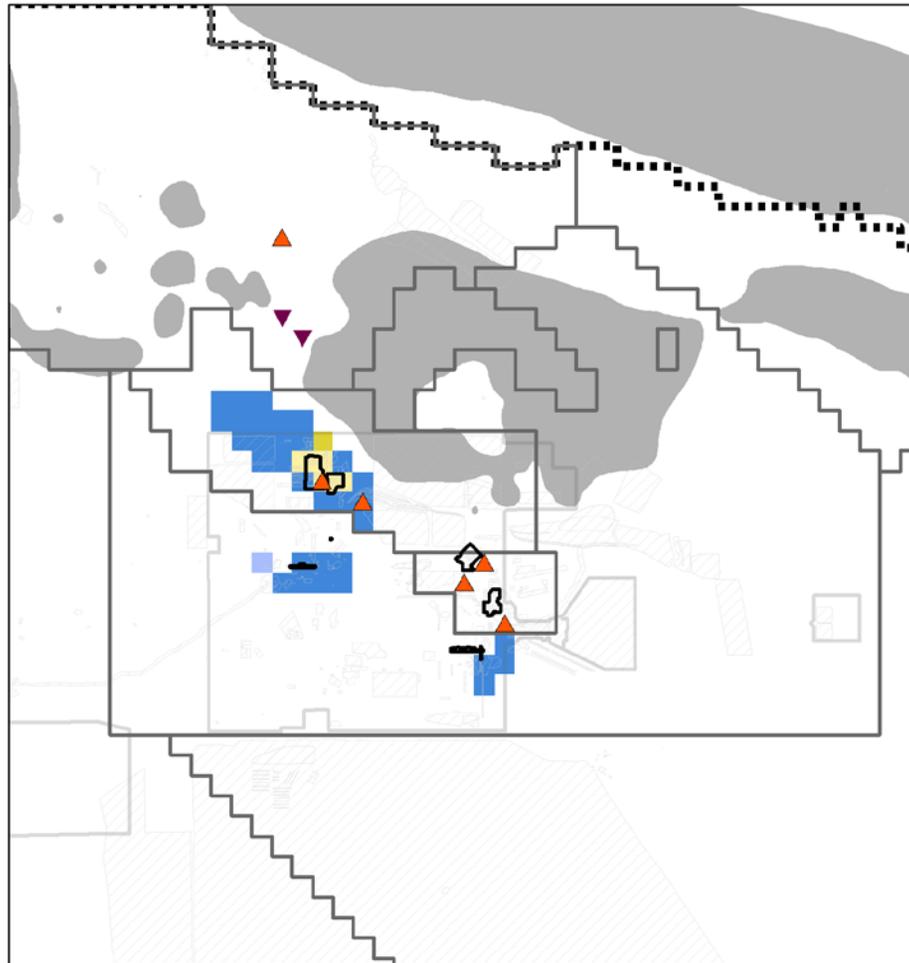
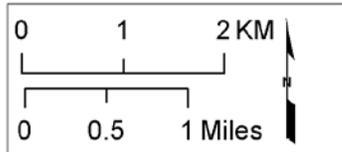


Figure B-126 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 3 simulation.

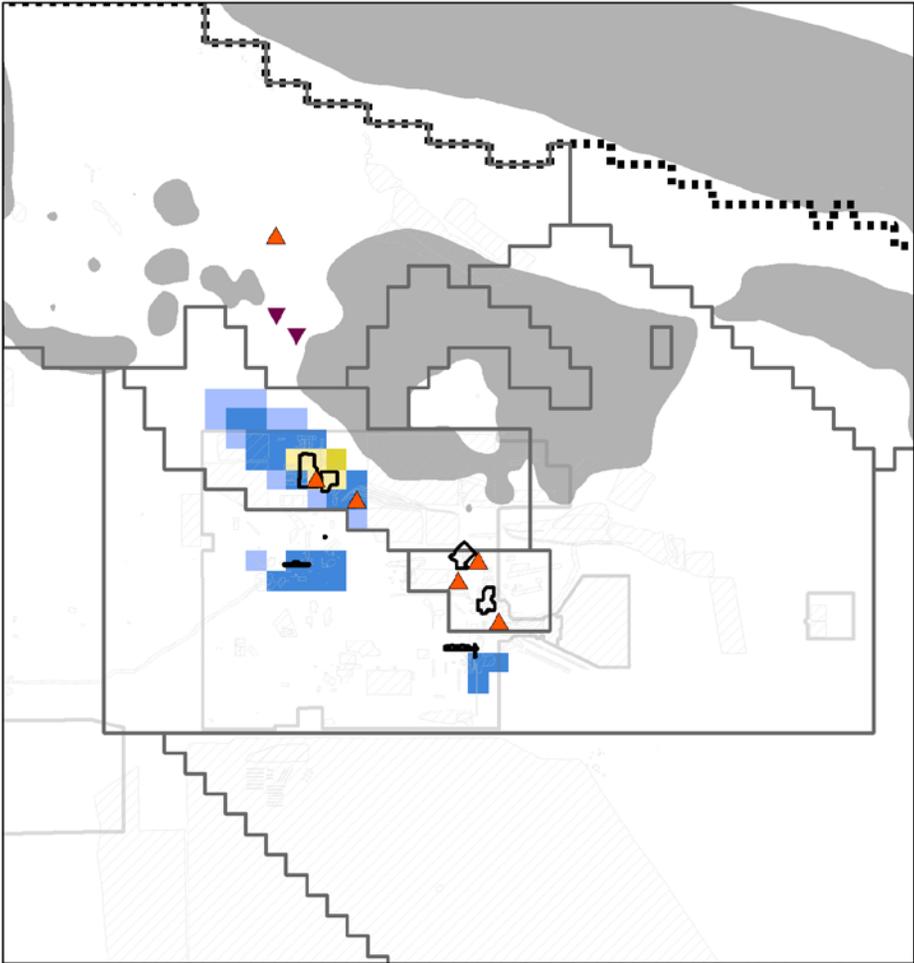
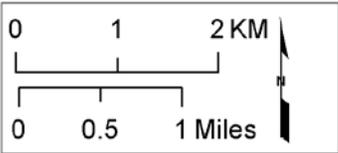
**0 Years
Uranium
Scenario 3**



P2R_FS_u238_0.png (DoubleFigure_FS.mxd)

Figure B-127 - Plan view contours of the uranium plume at simulation time 0 years based on the scenario 3 simulation.

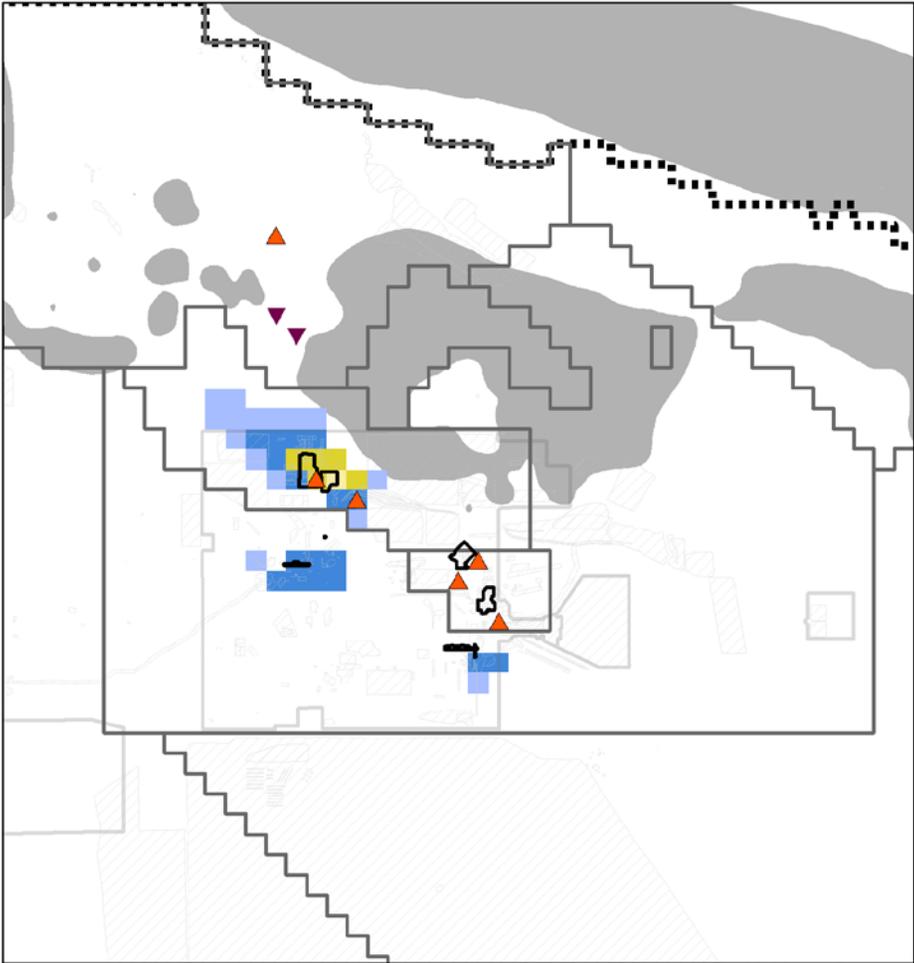
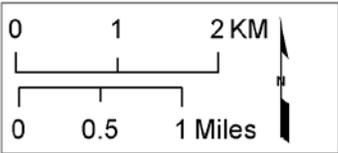
**1 Years
Uranium
Scenario 3**



P2R_FS_u238_1.png (DoubleFigure_FS.mxd)

Figure B-128 - Plan view contours of the uranium plume at simulation time 1 years based on the scenario 3 simulation.

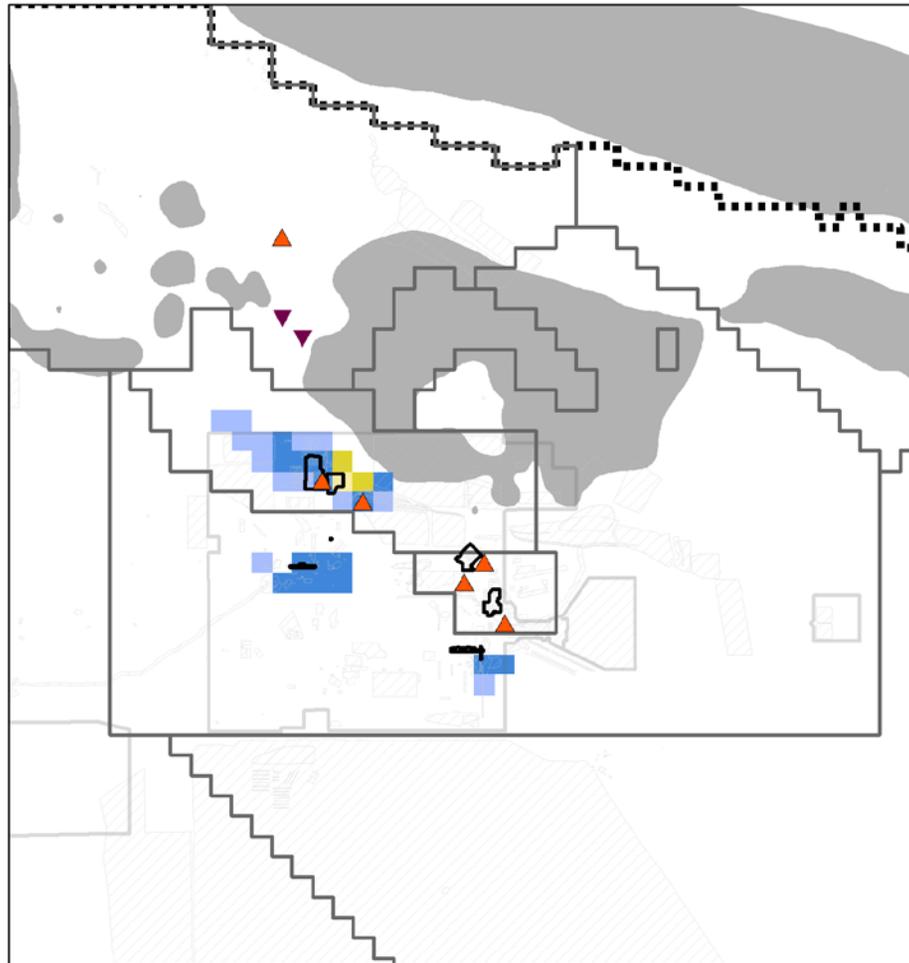
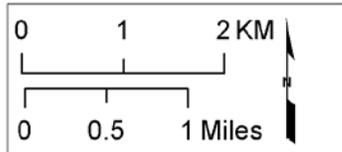
**2 Years
Uranium
Scenario 3**



P2R_FS_u238_2.png (DoubleFigure_FS.mxd)

Figure B-129 - Plan view contours of the uranium plume at simulation time 2 years based on the scenario 3 simulation.

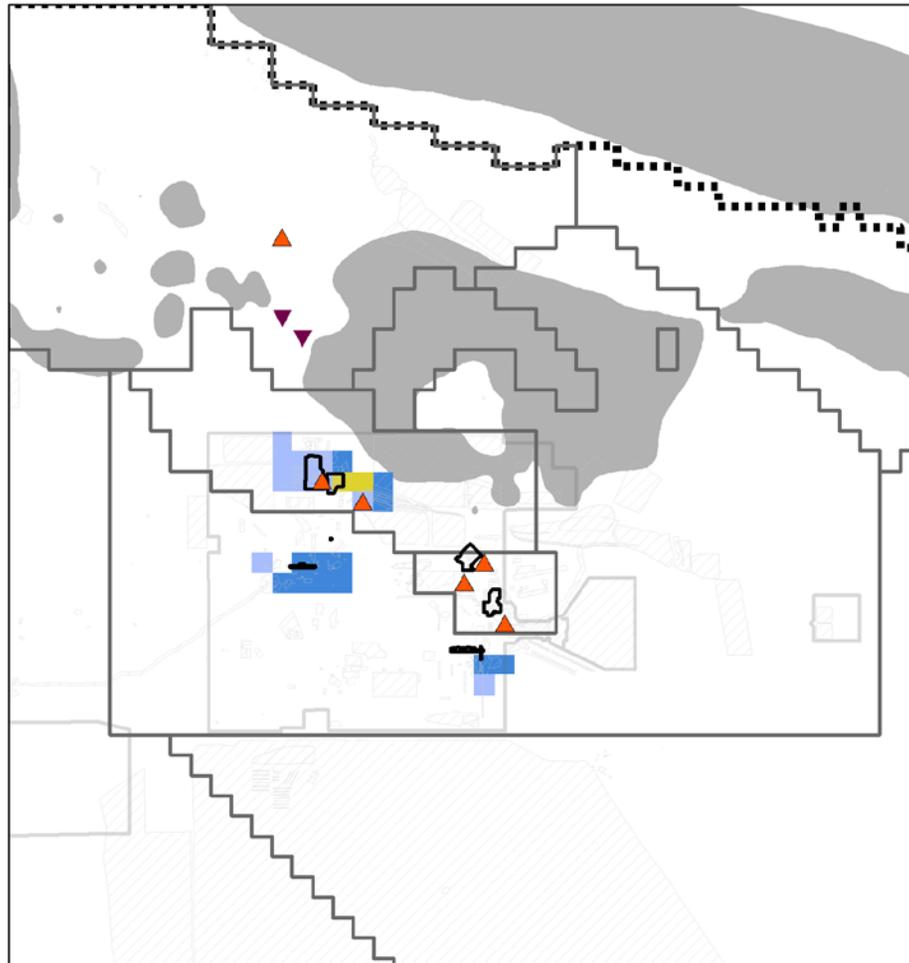
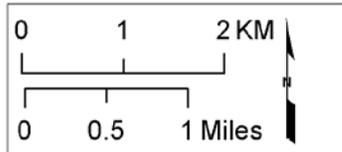
**5 Years
Uranium
Scenario 3**



P2R_FS_u238_5.png (DoubleFigure_FS.mxd)

Figure B-130 - Plan view contours of the uranium plume at simulation time 5 years based on the scenario 3 simulation.

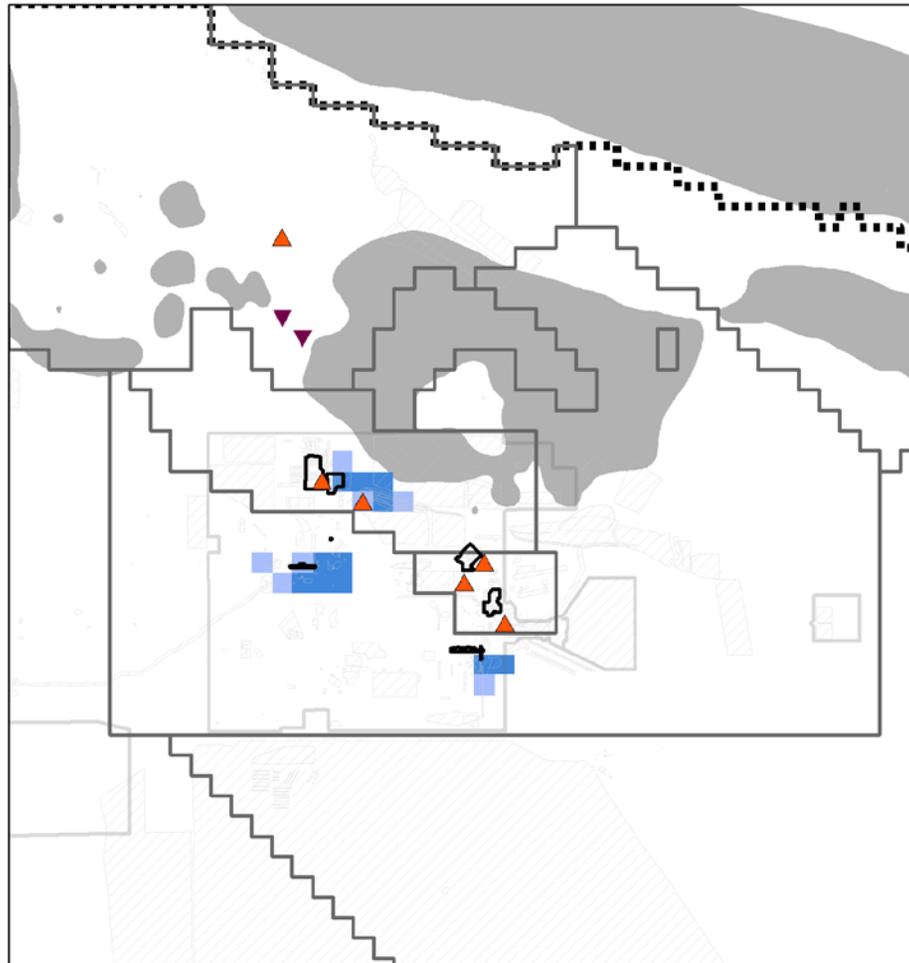
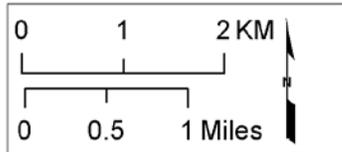
**10 Years
Uranium
Scenario 3**



P2R_FS_u238_10.png (DoubleFigure_FS.mxd)

Figure B-131 - Plan view contours of the uranium plume at simulation time 10 years based on the scenario 3 simulation.

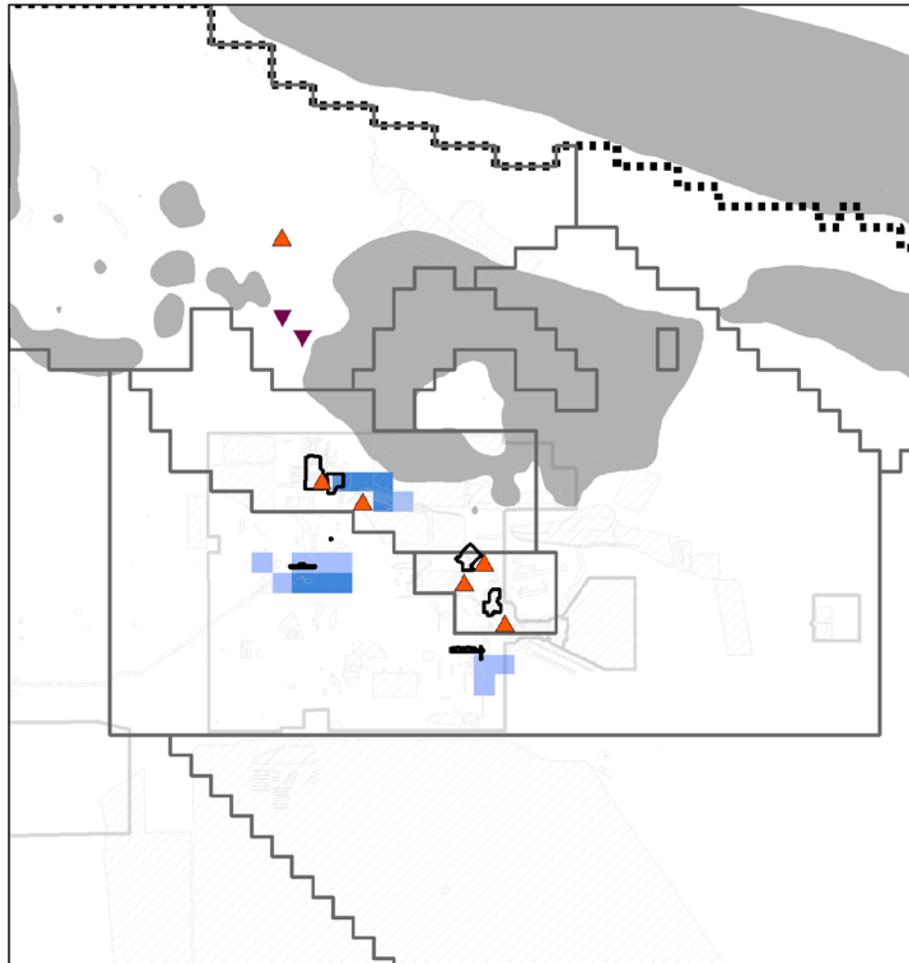
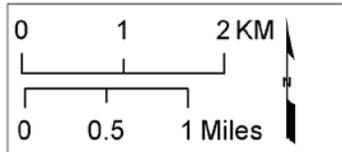
**15 Years
Uranium
Scenario 3**



P2R_FS_u238_15.png (DoubleFigure_FS.mxd)

Figure B-132 - Plan view contours of the uranium plume at simulation time 15 years based on the scenario 3 simulation.

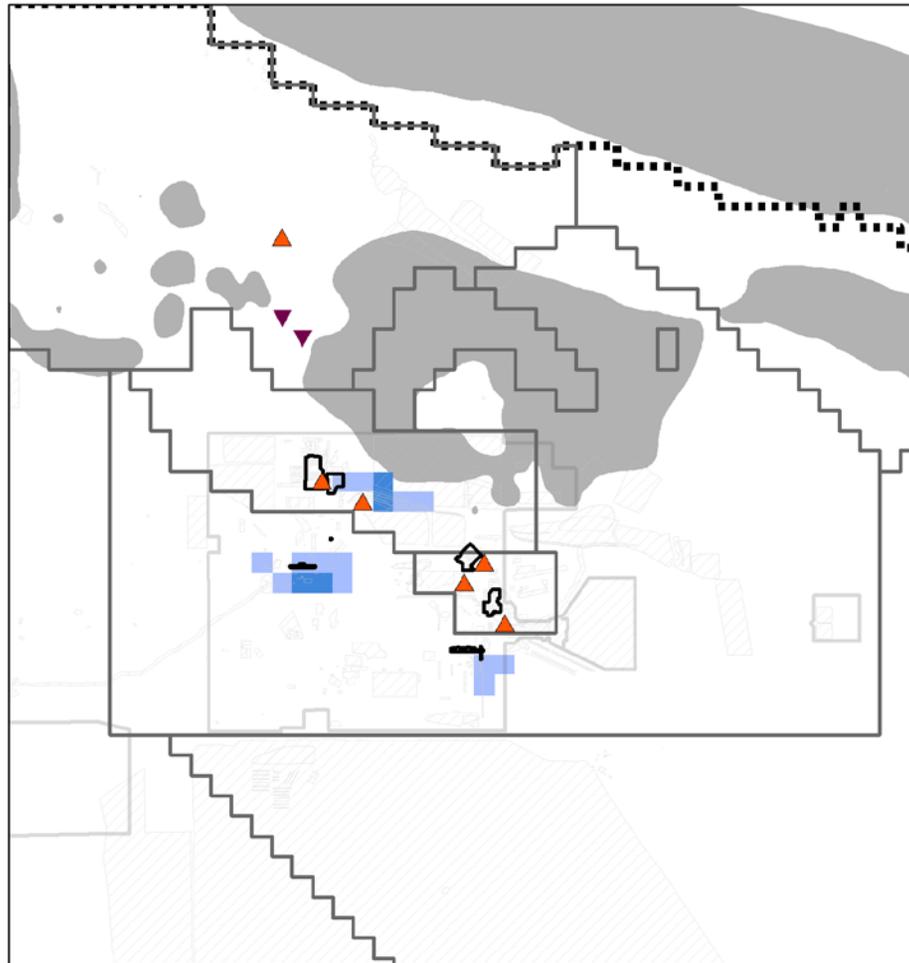
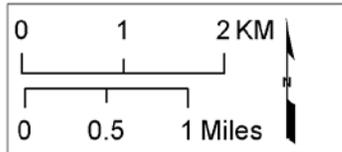
**20 Years
Uranium
Scenario 3**



P2R_FS_u238_20.png (DoubleFigure_FS.mxd)

Figure B-133 - Plan view contours of the uranium plume at simulation time 20 years based on the scenario 3 simulation.

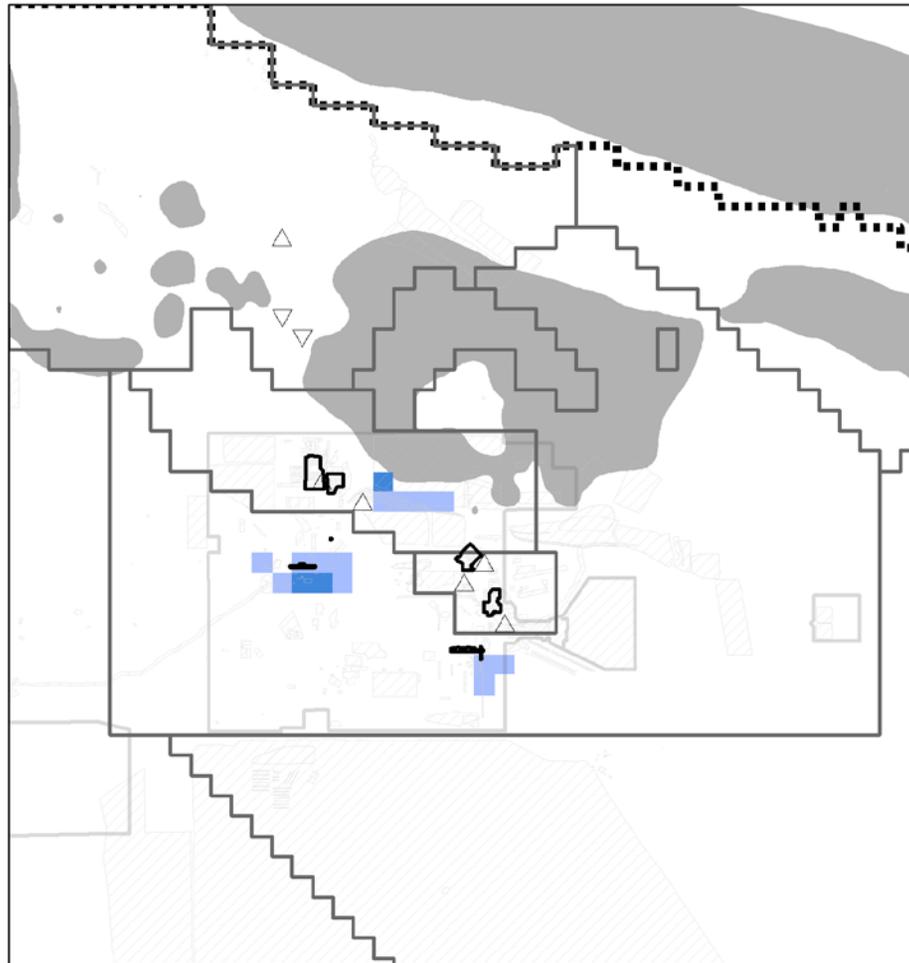
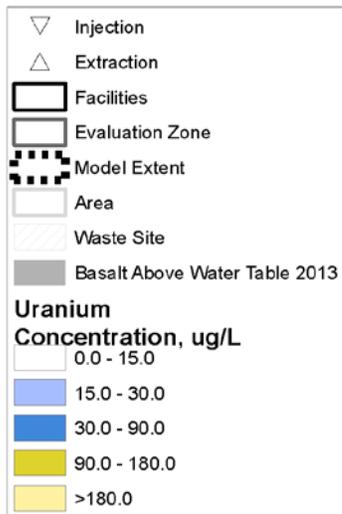
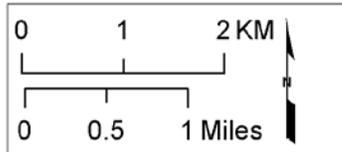
**25 Years
Uranium
Scenario 3**



P2R_FS_u238_25.png (DoubleFigure_FS.mxd)

Figure B-134 - Plan view contours of the uranium plume at simulation time 25 years based on the scenario 3 simulation.

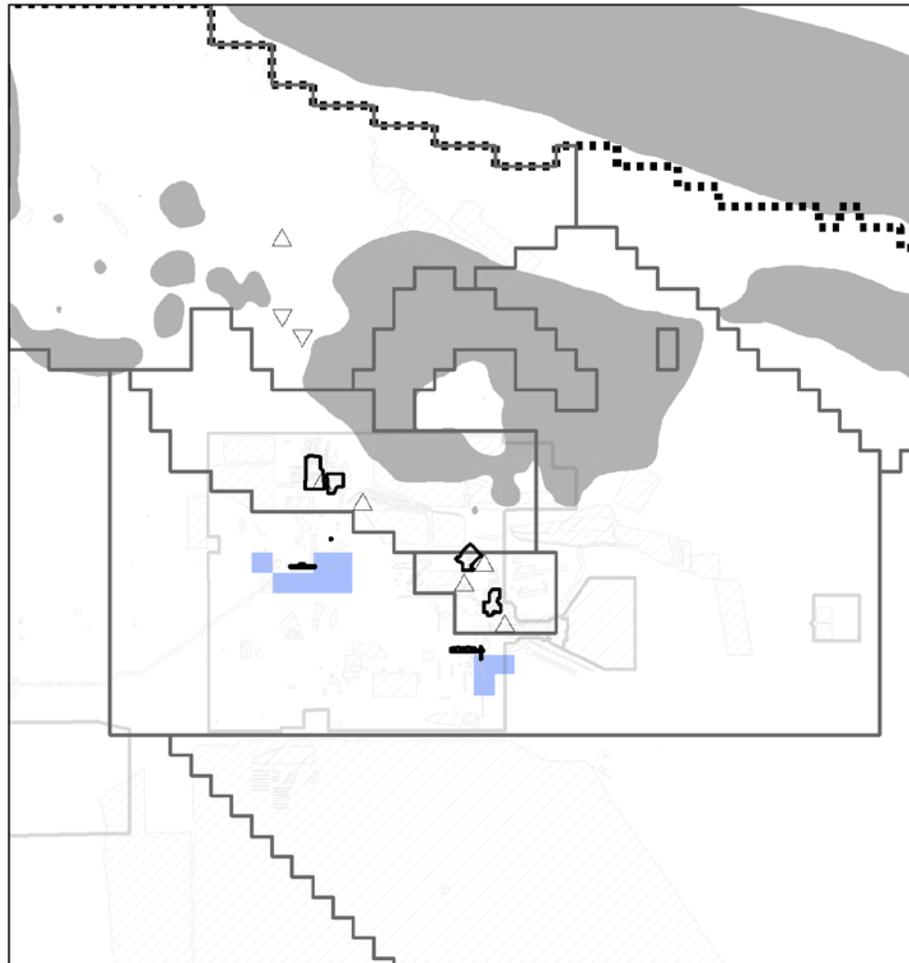
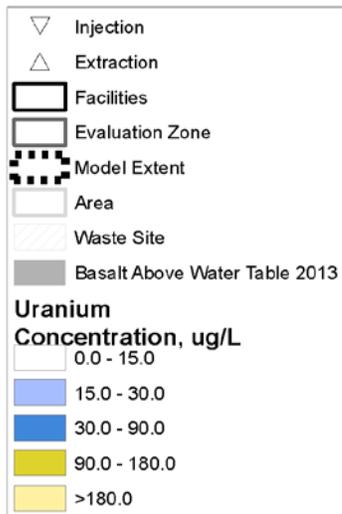
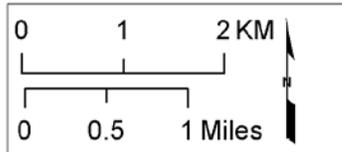
**30 Years
Uranium
Scenario 3**



P2R_FS_u238_30.png (DoubleFigure_FS.mxd)

Figure B-135 - Plan view contours of the uranium plume at simulation time 30 years based on the scenario 3 simulation.

**50 Years
Uranium
Scenario 3**



P2R_FS_u238_50.png (DoubleFigure_FS.mxd)

Figure B-136 - Plan view contours of the uranium plume at simulation time 50 years based on the scenario 3 simulation.

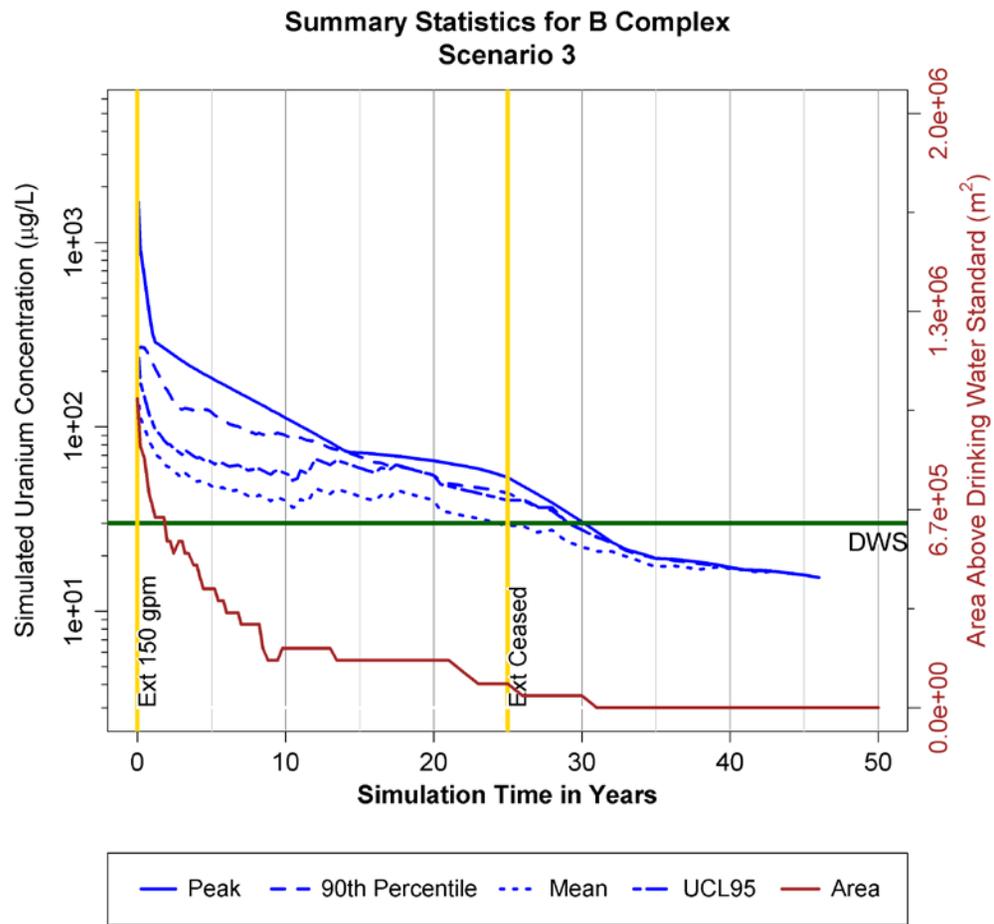


Figure B-137 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 3 simulation.

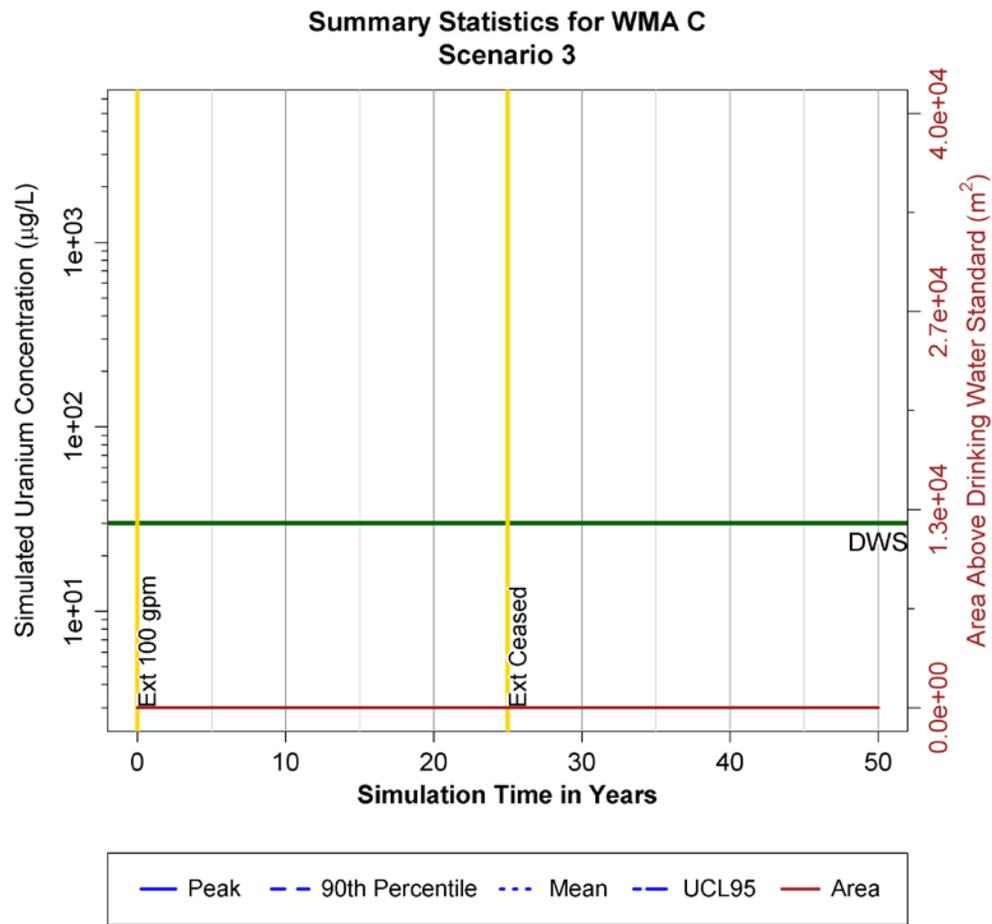


Figure B-138 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 3 simulation.

Summary Statistics for Greater 200 East
Scenario 3

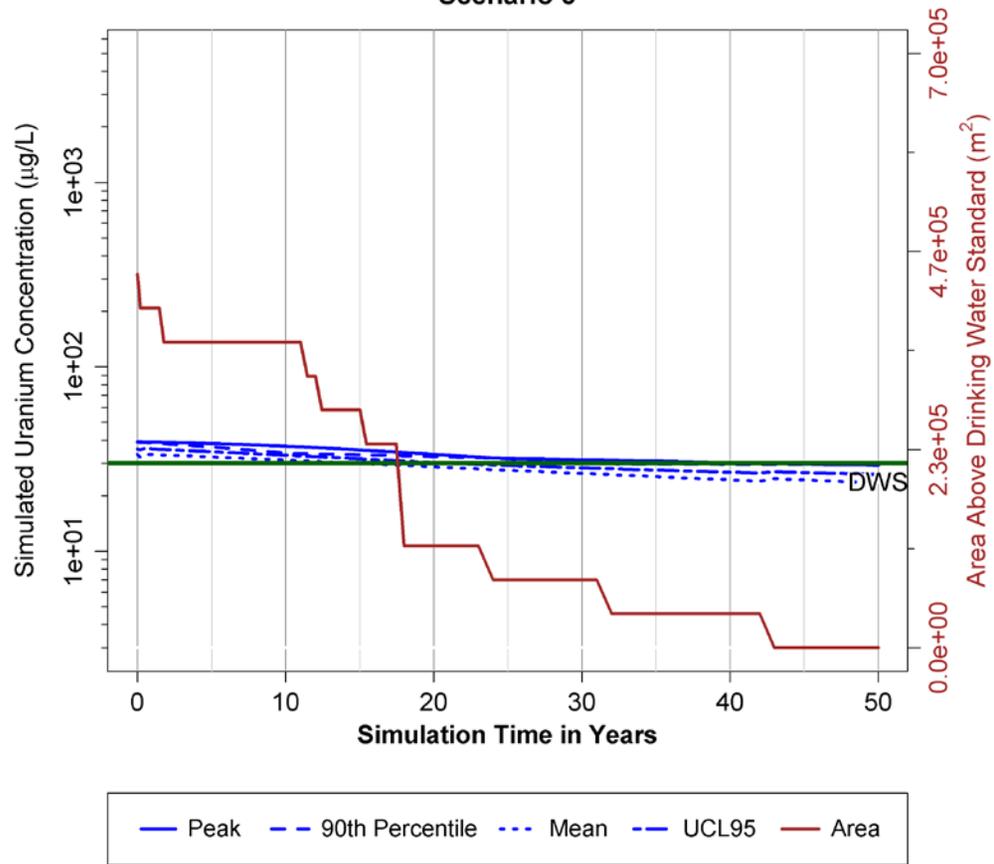


Figure B-139 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 3 simulation.

Summary Statistics for Gable Gap Area
Scenario 3

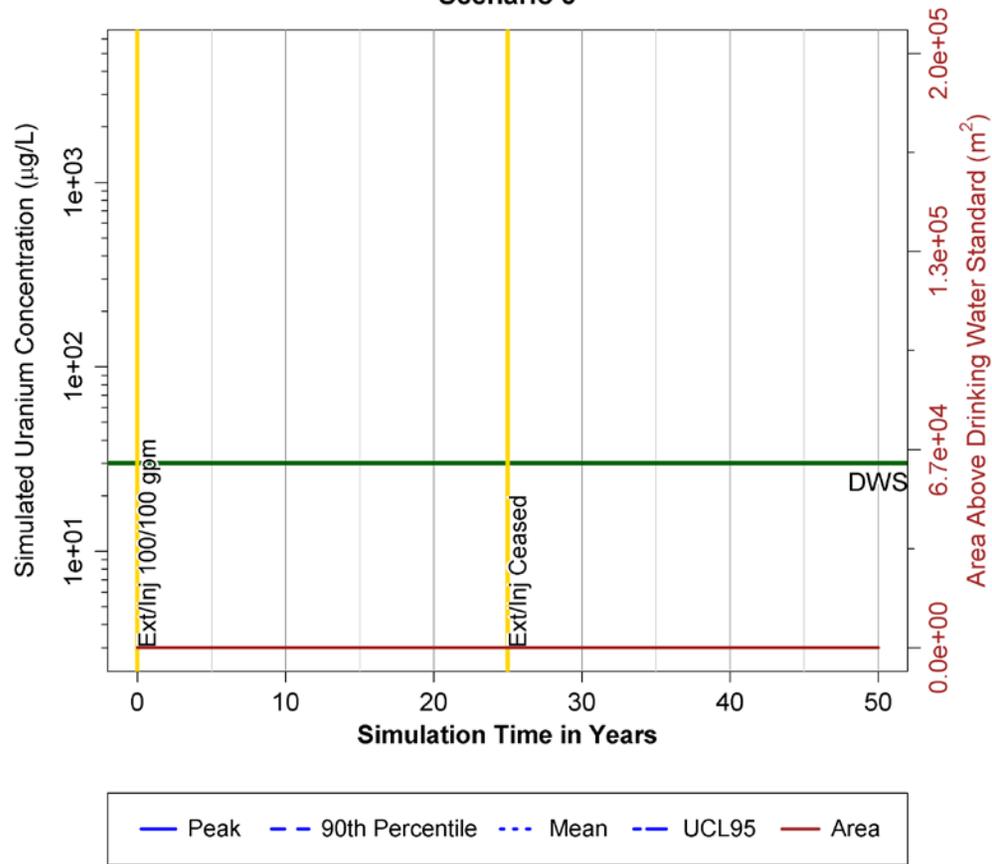
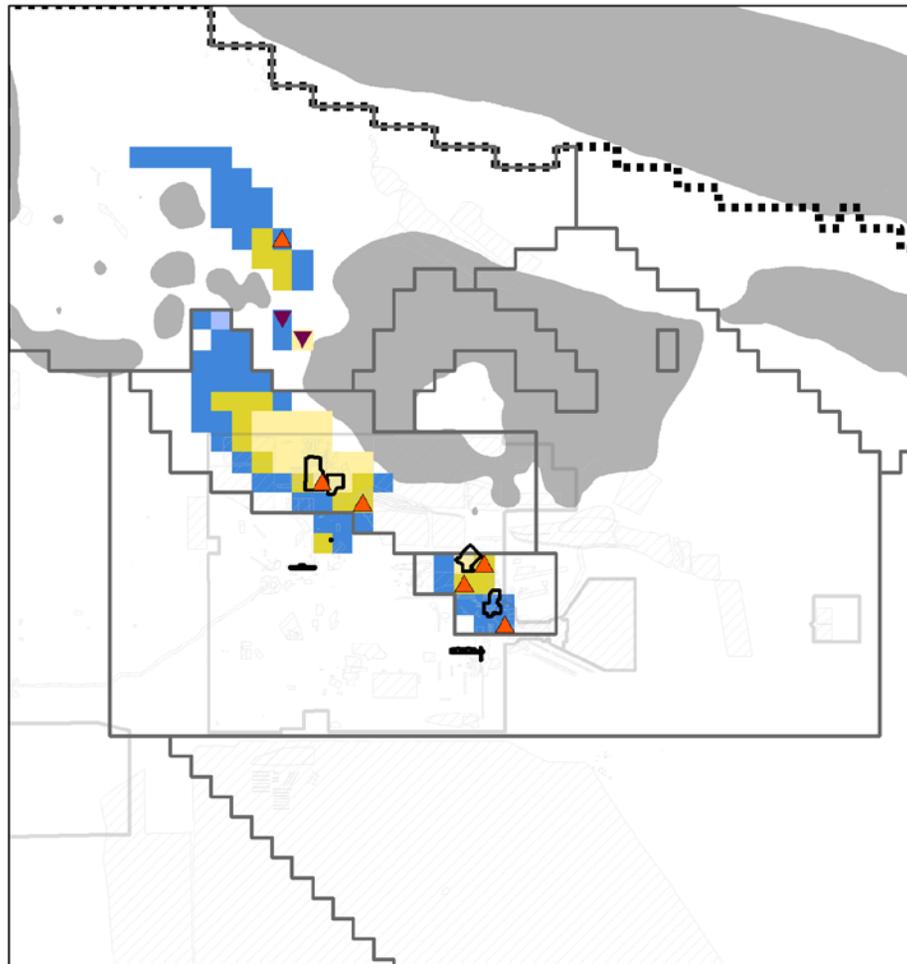
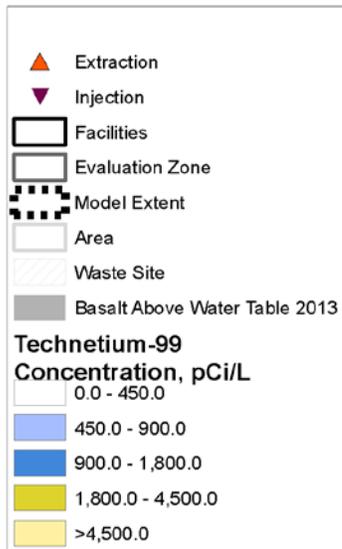
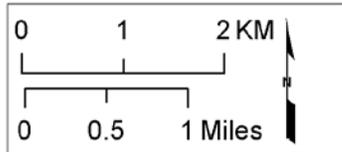


Figure B-140 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 3 simulation.

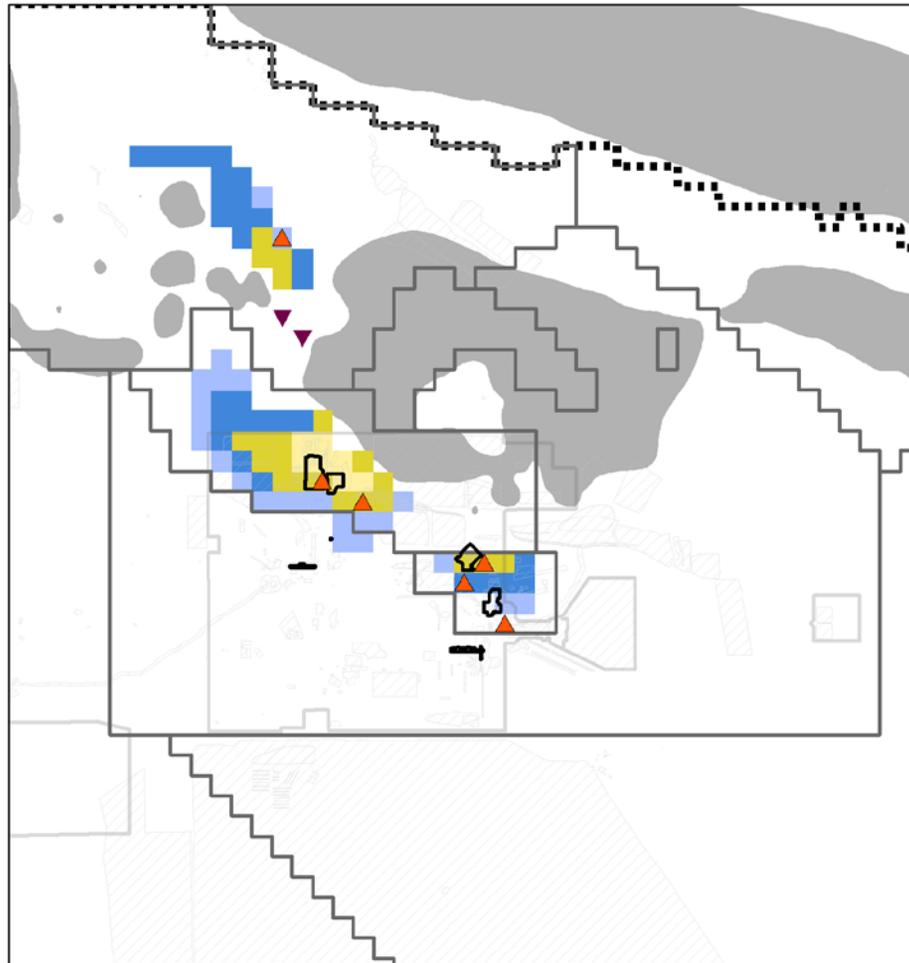
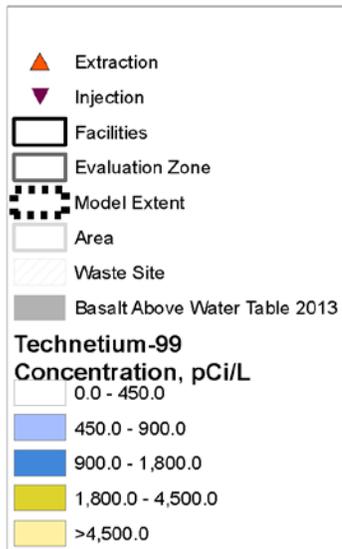
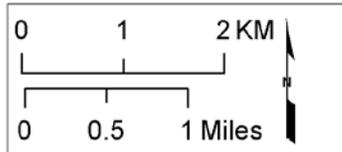
**0 Years
Technetium-99
Scenario 3
Continuing Source**



P2R_FS_tc99_0.png (DoubleFigure_FS.mxd)

Figure B-141 - Plan view contours of the technetium-99 plume at simulation time 0 years based on the scenario 3 simulation with a continuing source term.

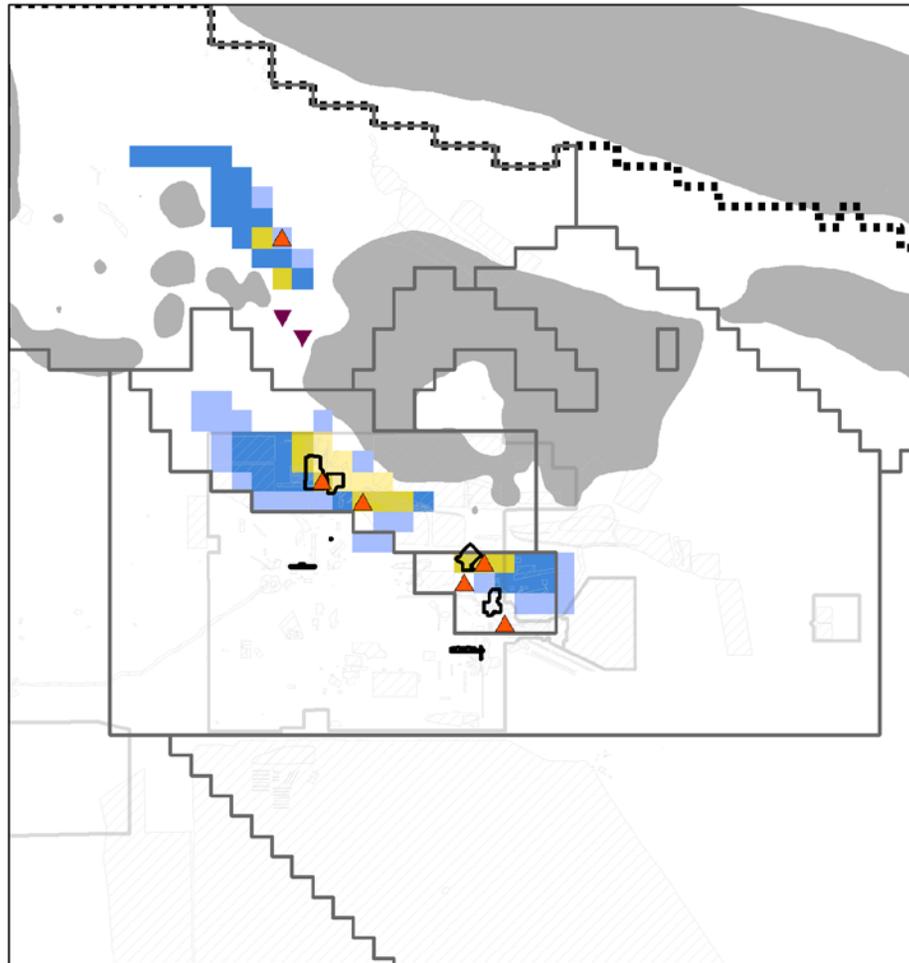
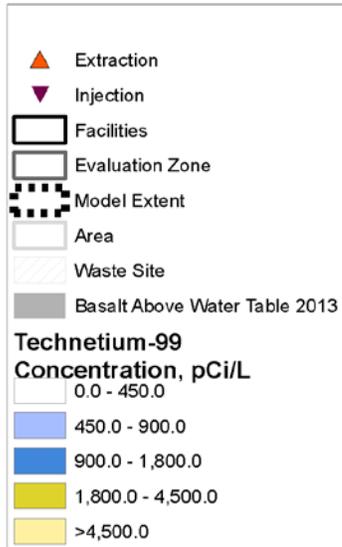
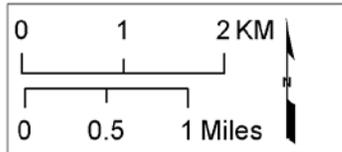
**1 Years
Technetium-99
Scenario 3
Continuing Source**



P2R_FS_tc99_1.png (DoubleFigure_FS.mxd)

Figure B-142 - Plan view contours of the technetium-99 plume at simulation time 1 years based on the scenario 3 simulation with a continuing source term.

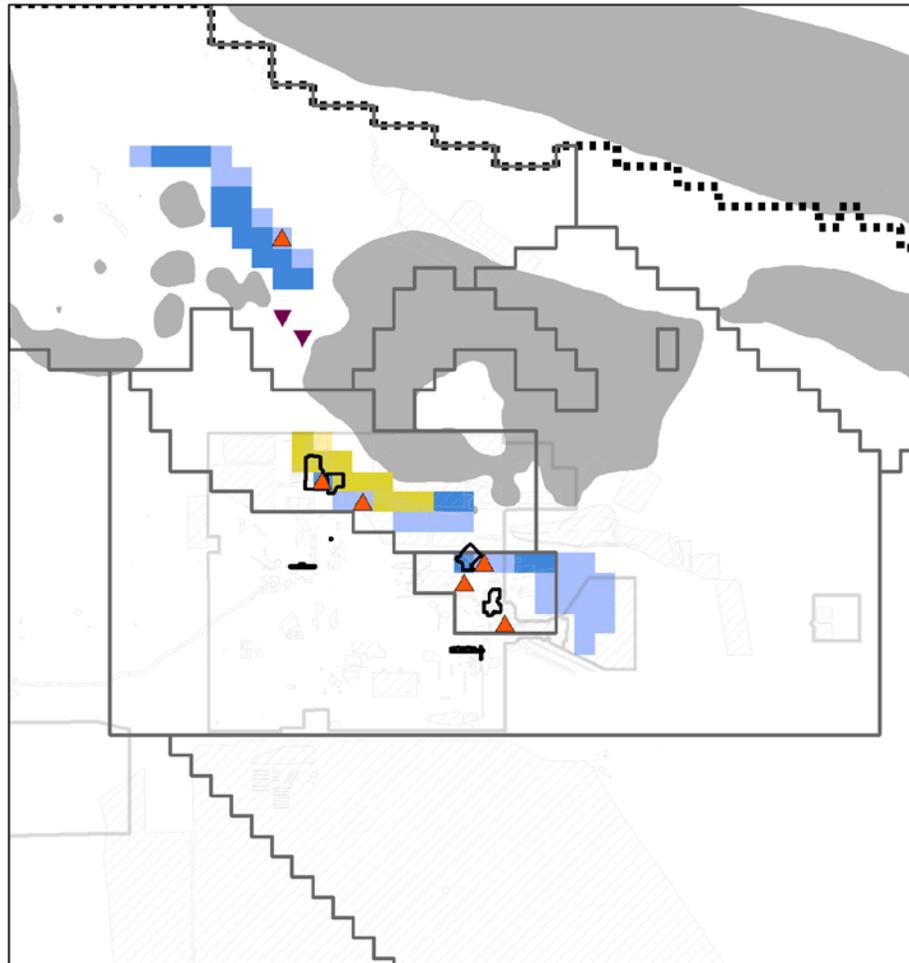
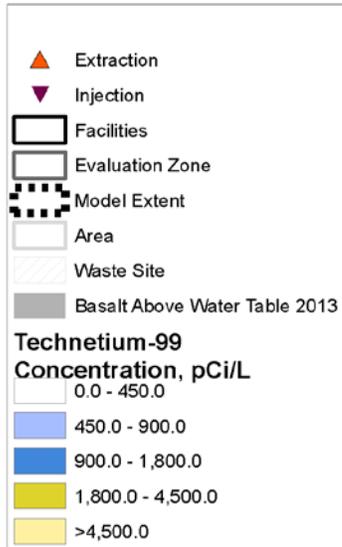
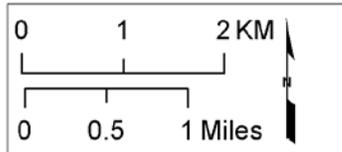
**2 Years
Technetium-99
Scenario 3
Continuing Source**



P2R_FS_tc99_2.png (DoubleFigure_FS.mxd)

Figure B-143 - Plan view contours of the technetium-99 plume at simulation time 2 years based on the scenario 3 simulation with a continuing source term.

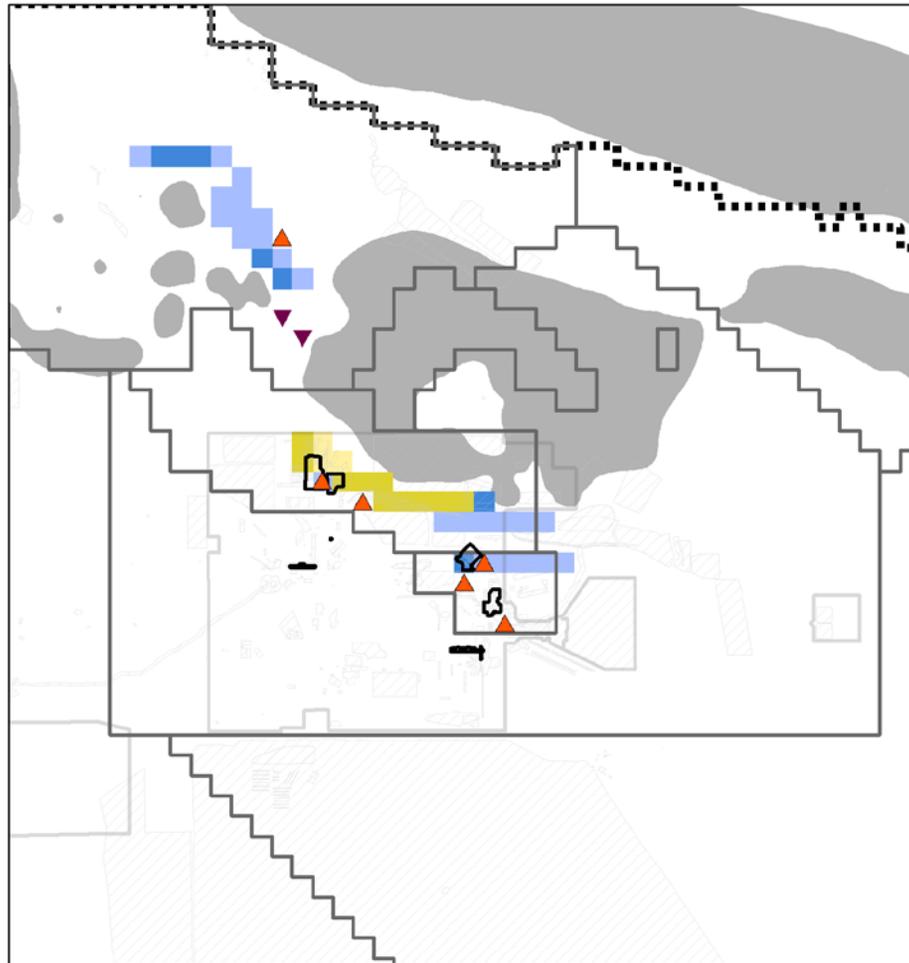
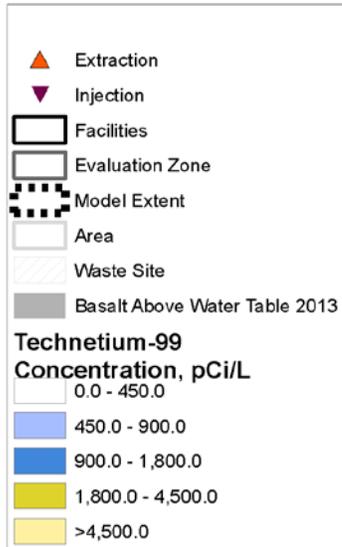
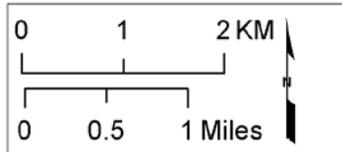
**5 Years
Technetium-99
Scenario 3
Continuing Source**



P2R_FS_tc99_5.png (DoubleFigure_FS.mxd)

Figure B-144 - Plan view contours of the technetium-99 plume at simulation time 5 years based on the scenario 3 simulation with a continuing source term.

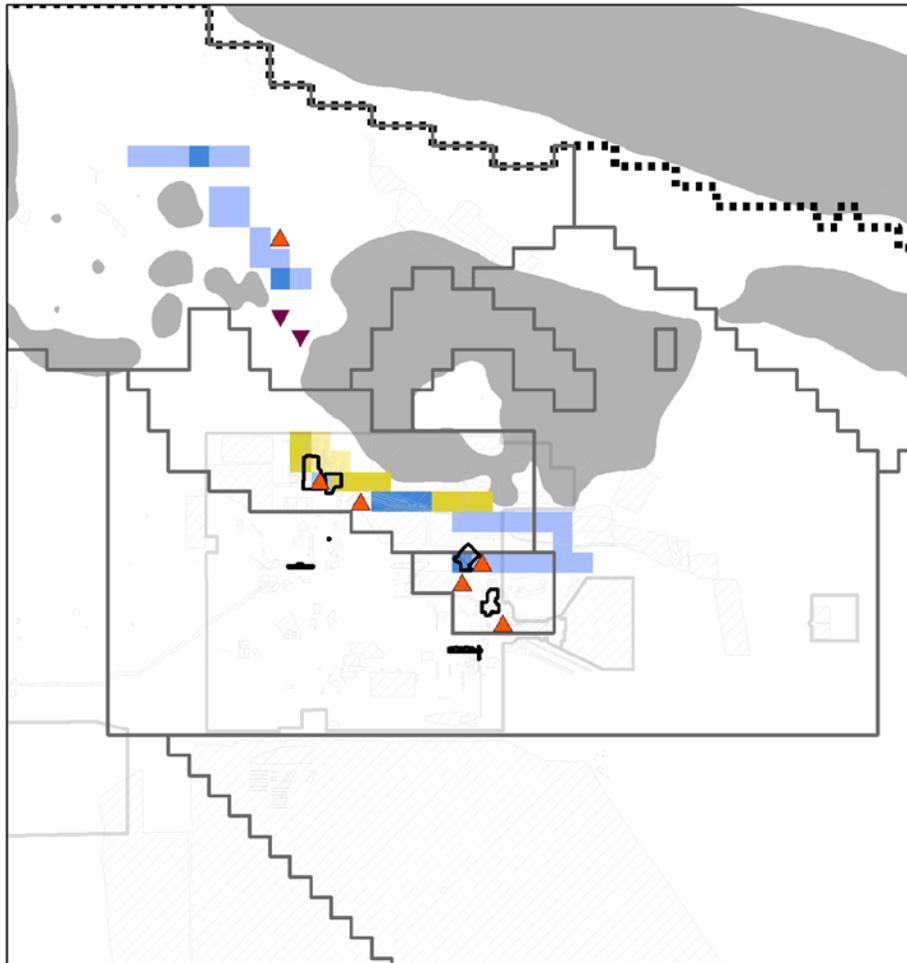
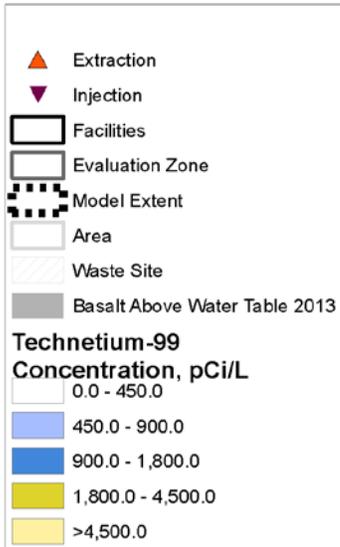
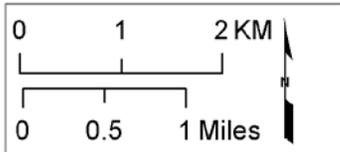
**10 Years
Technetium-99
Scenario 3
Continuing Source**



P2R_FS_tc99_10.png (DoubleFigure_FS.mxd)

Figure B-145 - Plan view contours of the technetium-99 plume at simulation time 10 years based on the scenario 3 simulation with a continuing source term.

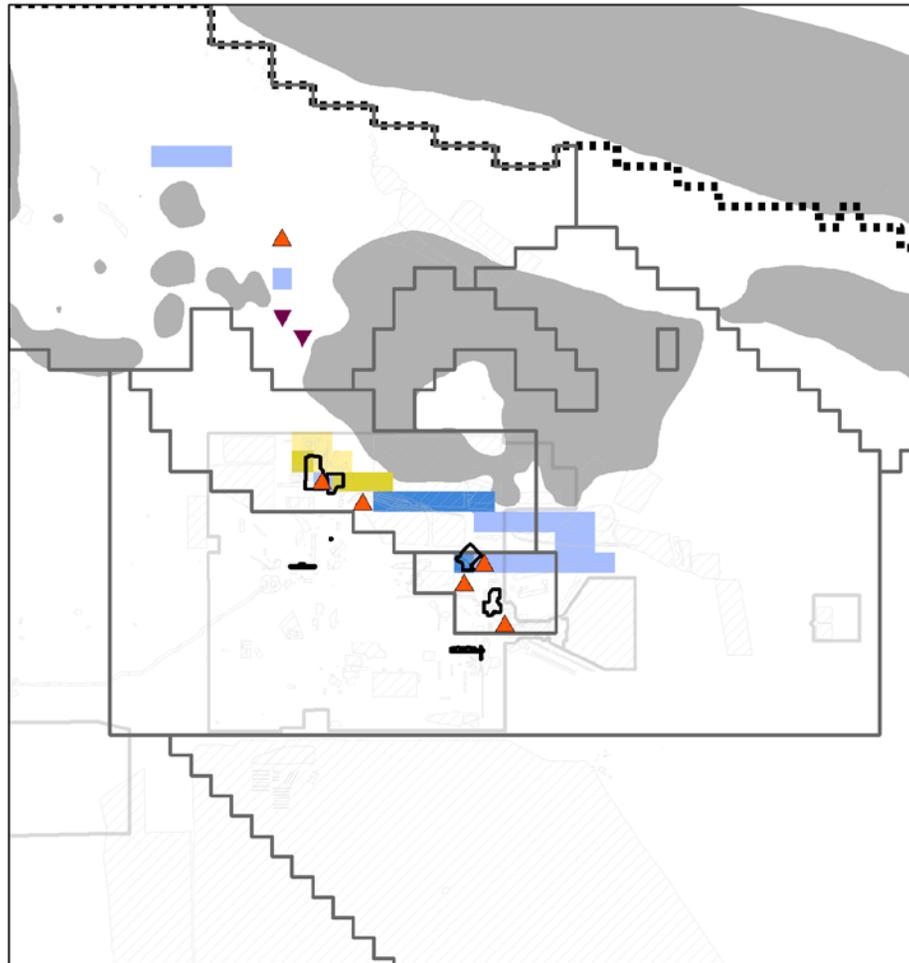
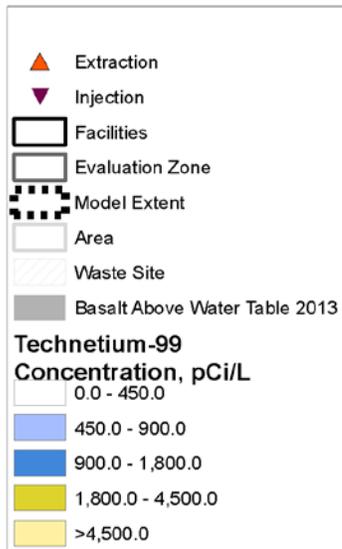
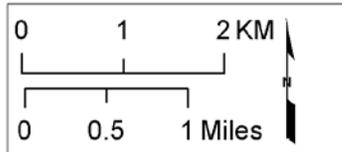
**15 Years
Technetium-99
Scenario 3
Continuing Source**



P2R_FS_tc99_15.png (DoubleFigure_FS.mxd)

Figure B-146 - Plan view contours of the technetium-99 plume at simulation time 15 years based on the scenario 3 simulation with a continuing source term.

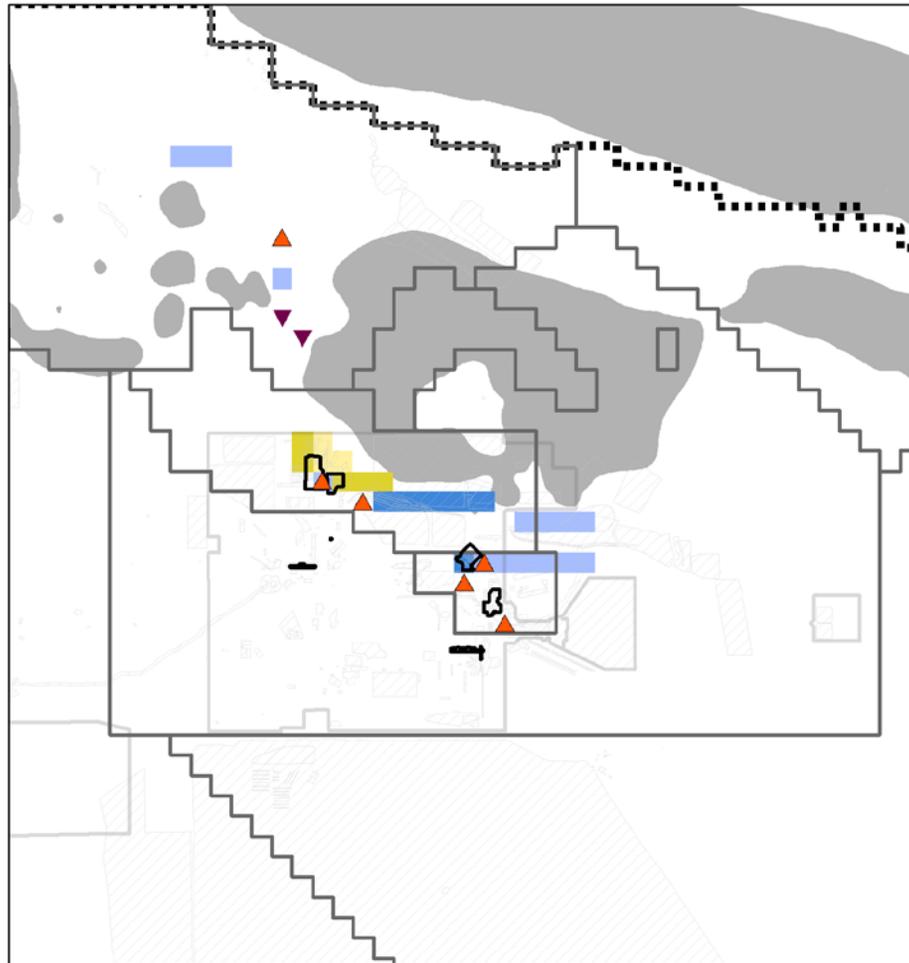
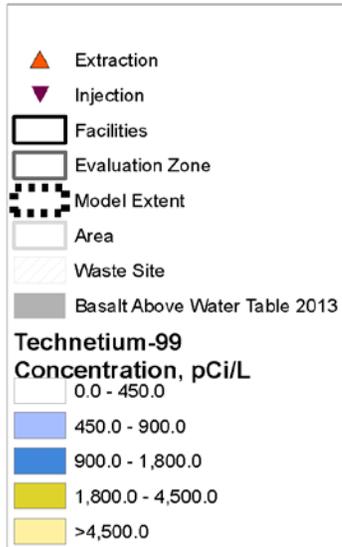
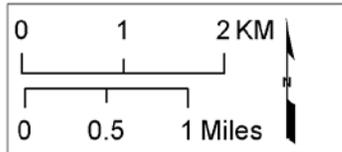
**20 Years
Technetium-99
Scenario 3
Continuing Source**



P2R_FS_tc99_20.png (DoubleFigure_FS.mxd)

Figure B-147 - Plan view contours of the technetium-99 plume at simulation time 20 years based on the scenario 3 simulation with a continuing source term.

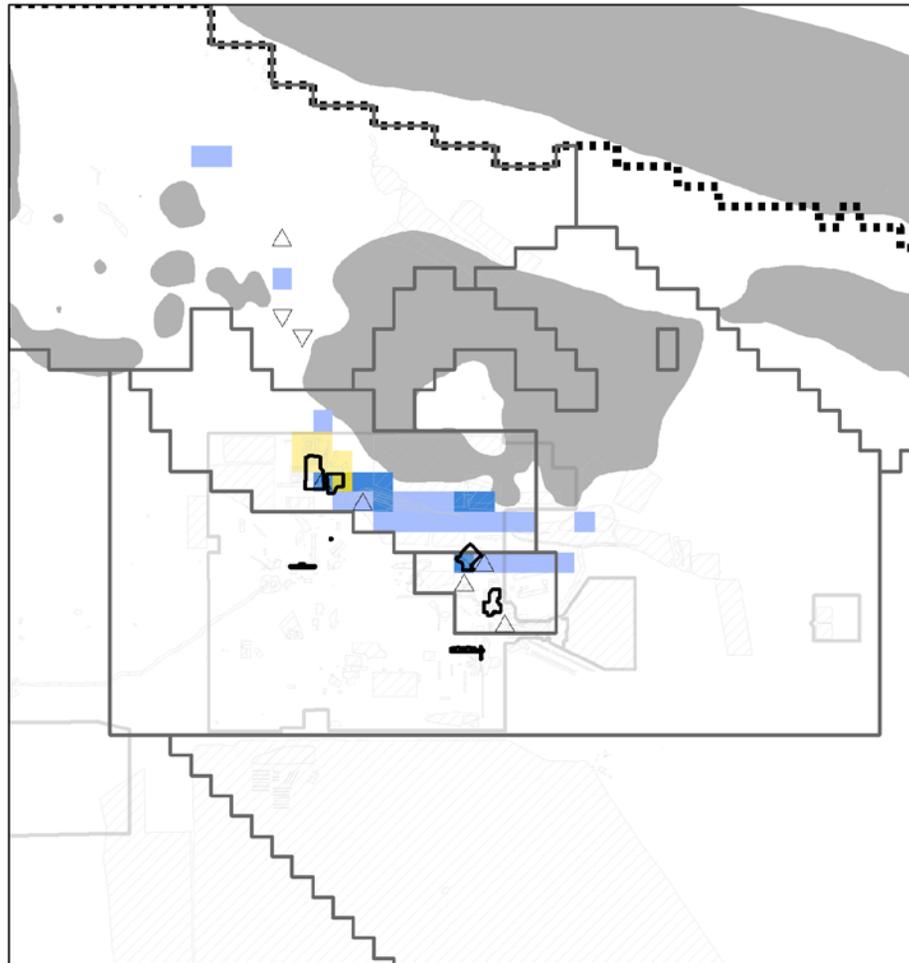
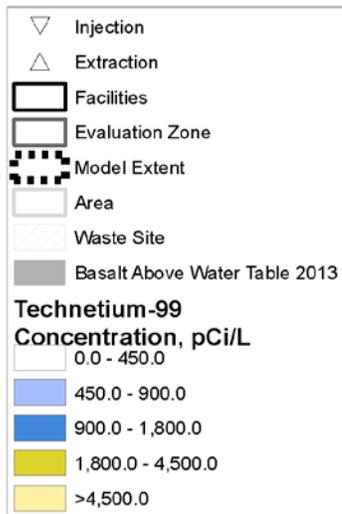
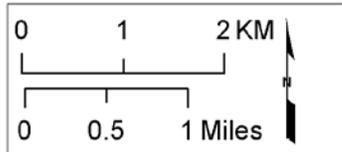
**25 Years
Technetium-99
Scenario 3
Continuing Source**



P2R_FS_tc99_25.png (DoubleFigure_FS.mxd)

Figure B-148 - Plan view contours of the technetium-99 plume at simulation time 25 years based on the scenario 3 simulation with a continuing source term.

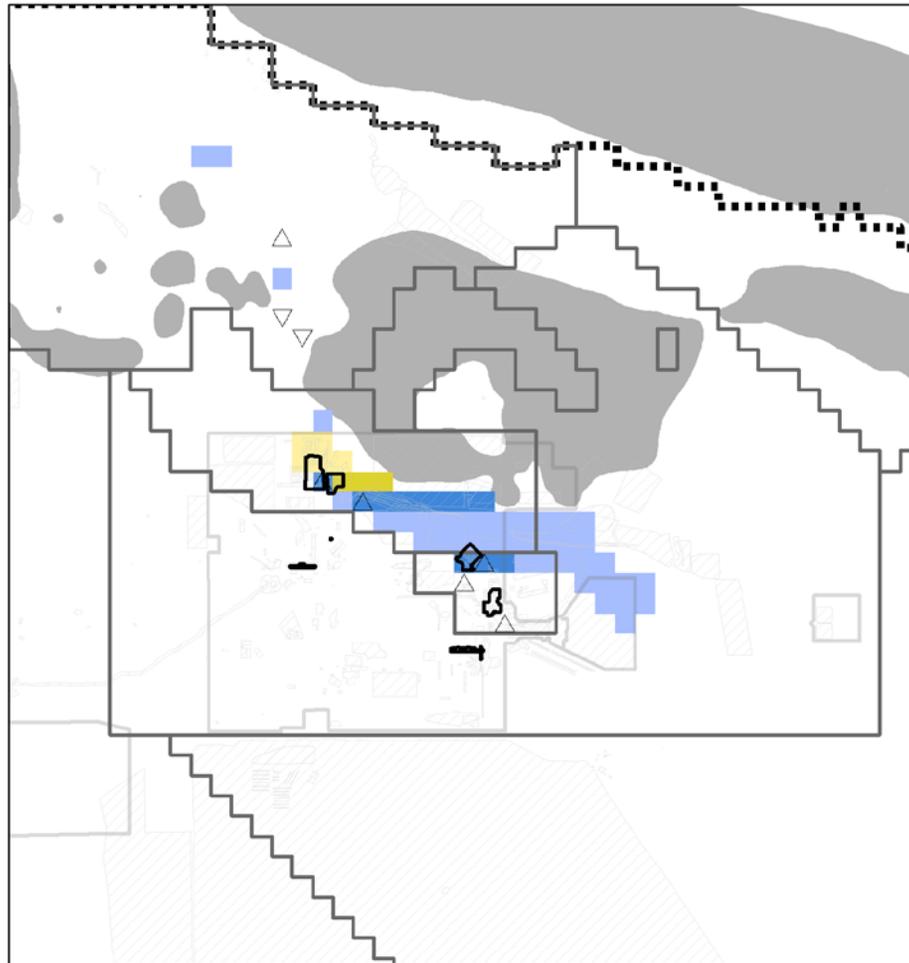
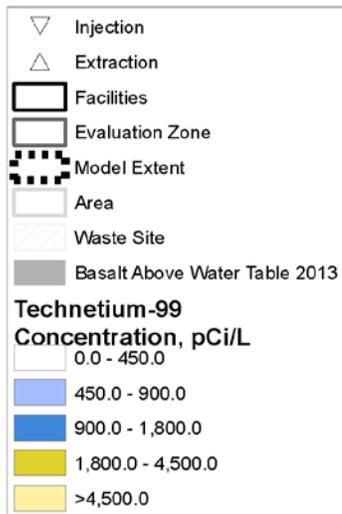
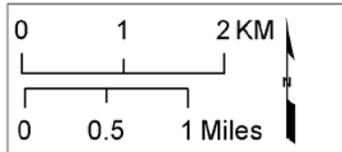
**30 Years
Technetium-99
Scenario 3
Continuing Source**



P2R_FS_tc99_30.png (DoubleFigure_FS.mxd)

Figure B-149 - Plan view contours of the technetium-99 plume at simulation time 30 years based on the scenario 3 simulation with a continuing source term.

**50 Years
Technetium-99
Scenario 3
Continuing Source**



P2R_FS_tc99_50.png (DoubleFigure_FS.mxd)

Figure B-150 - Plan view contours of the technetium-99 plume at simulation time 50 years based on the scenario 3 simulation with a continuing source term.

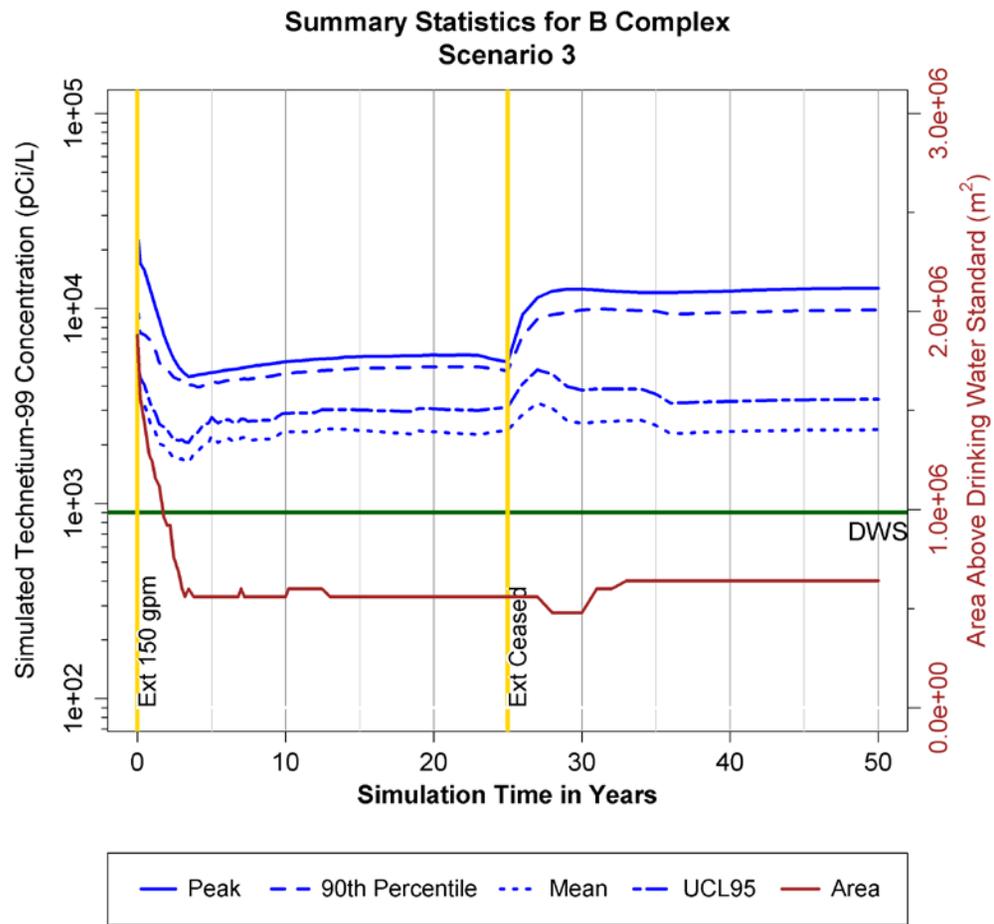


Figure B-151 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 3 simulation with a continuing source term.

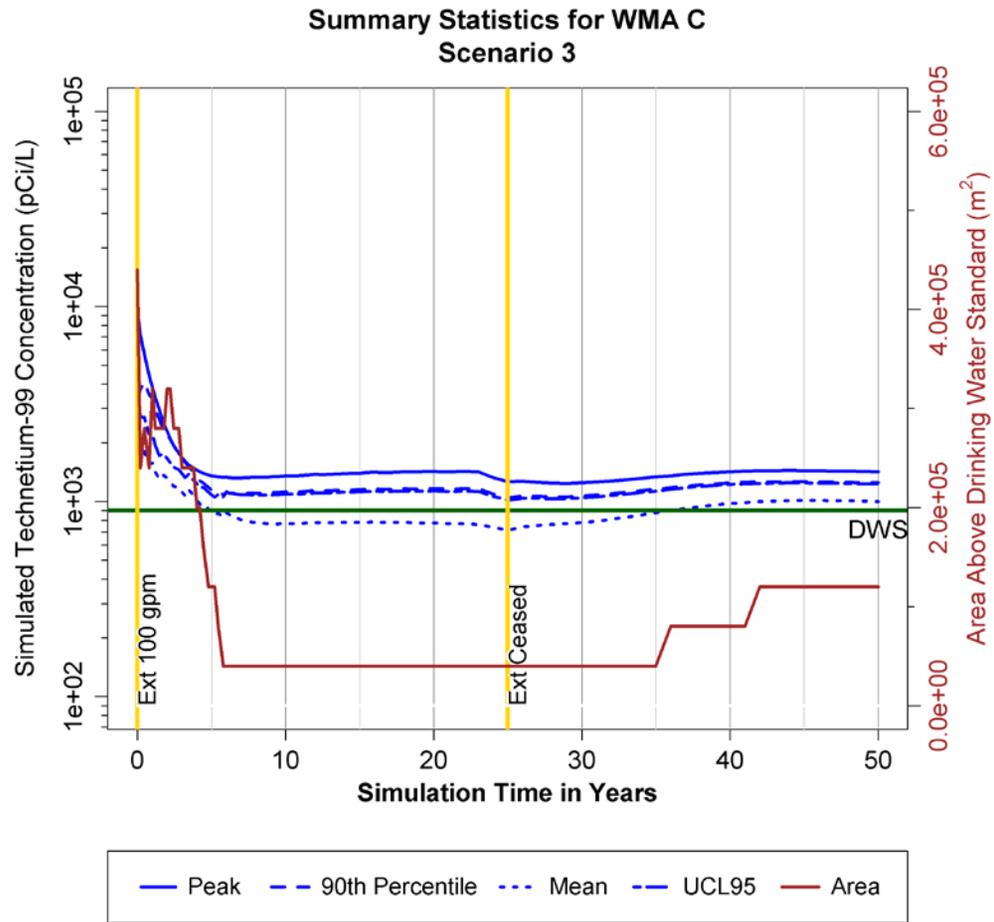


Figure B-152 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 3 simulation with a continuing source term.

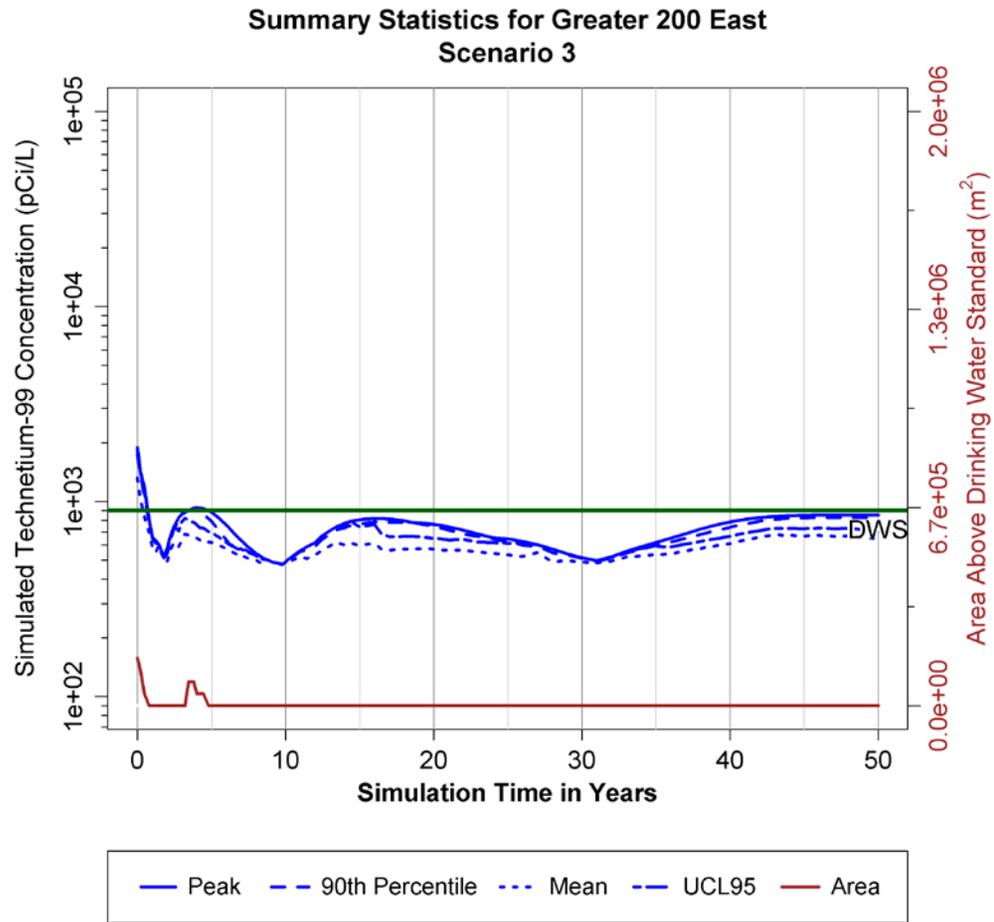


Figure B-153 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 3 simulation with a continuing source term.

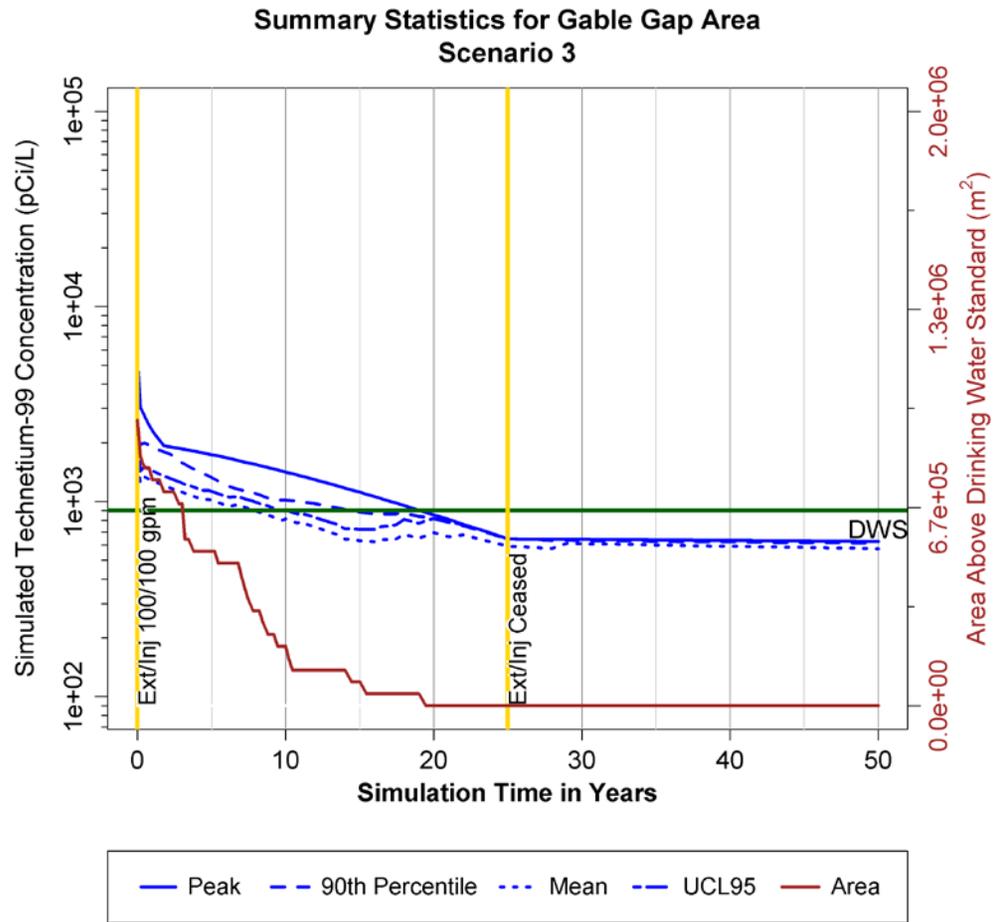
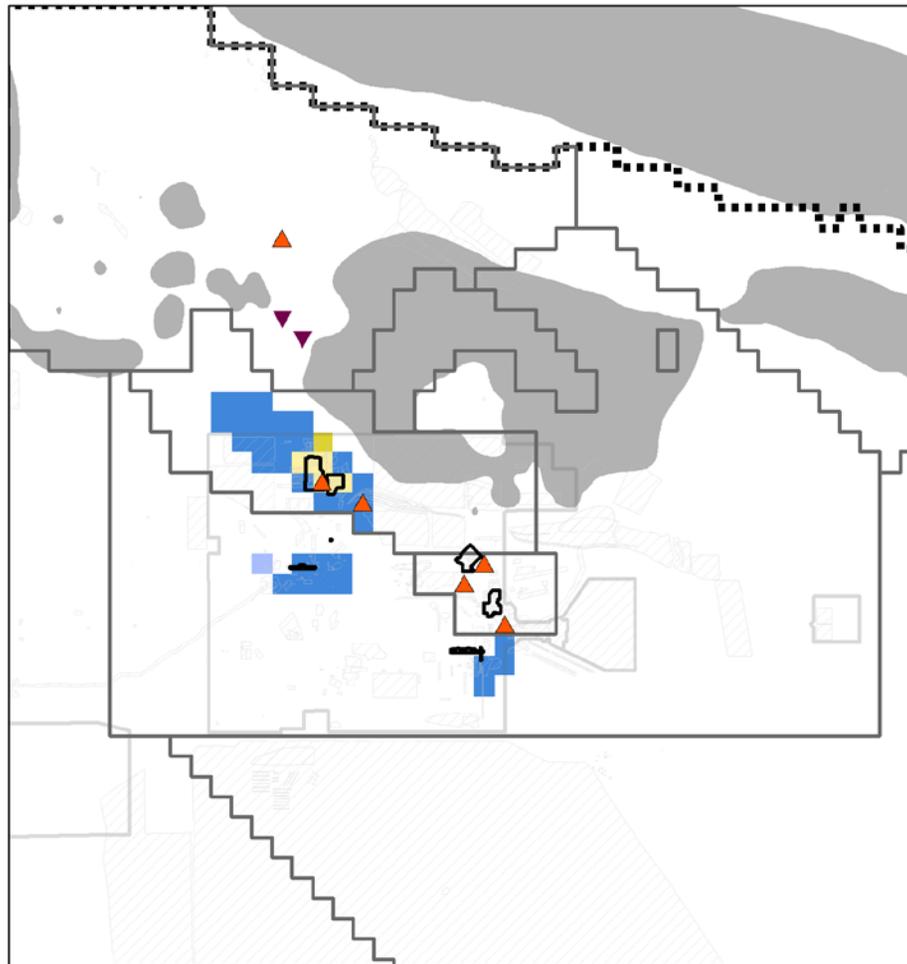
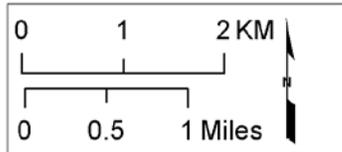


Figure B-154 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 3 simulation with a continuing source term.

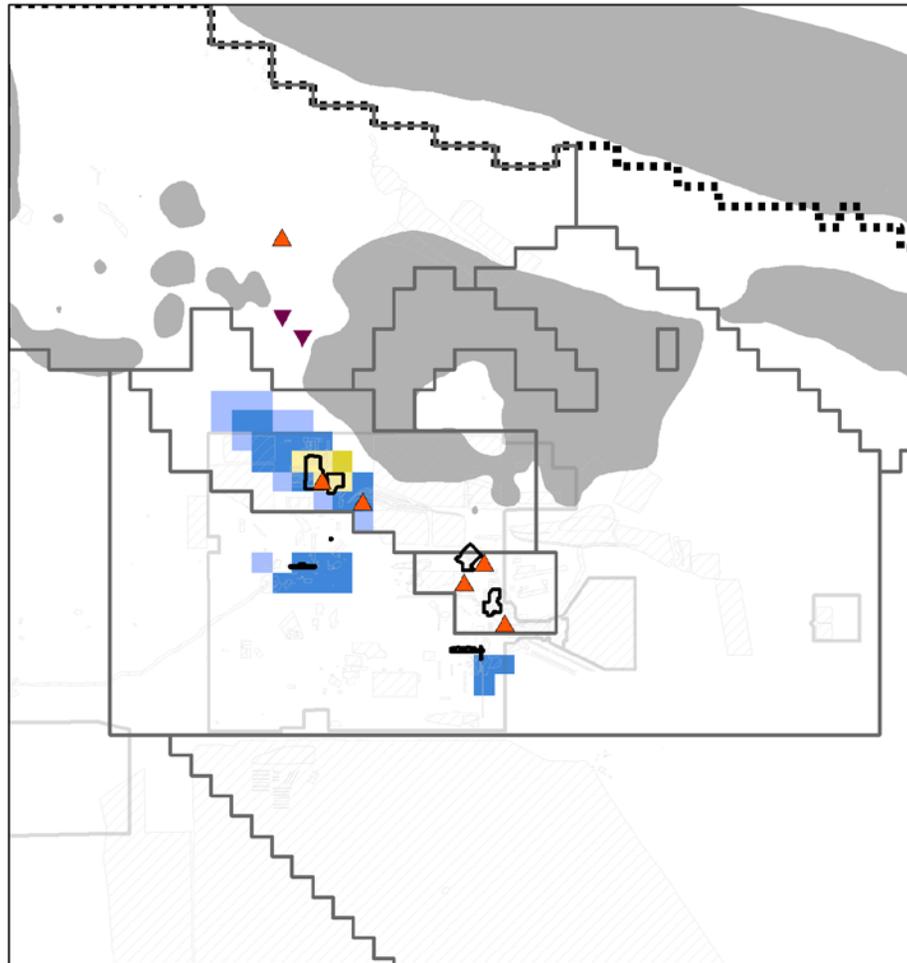
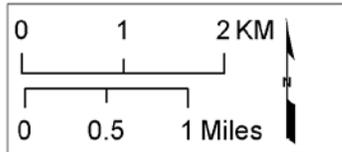
**0 Years
Uranium
Scenario 3
Continuing Source**



P2R_FS_u238_0.png (DoubleFigure_FS.mxd)

Figure B-155 - Plan view contours of the uranium plume at simulation time 0 years based on the scenario 3 simulation with a continuing source term.

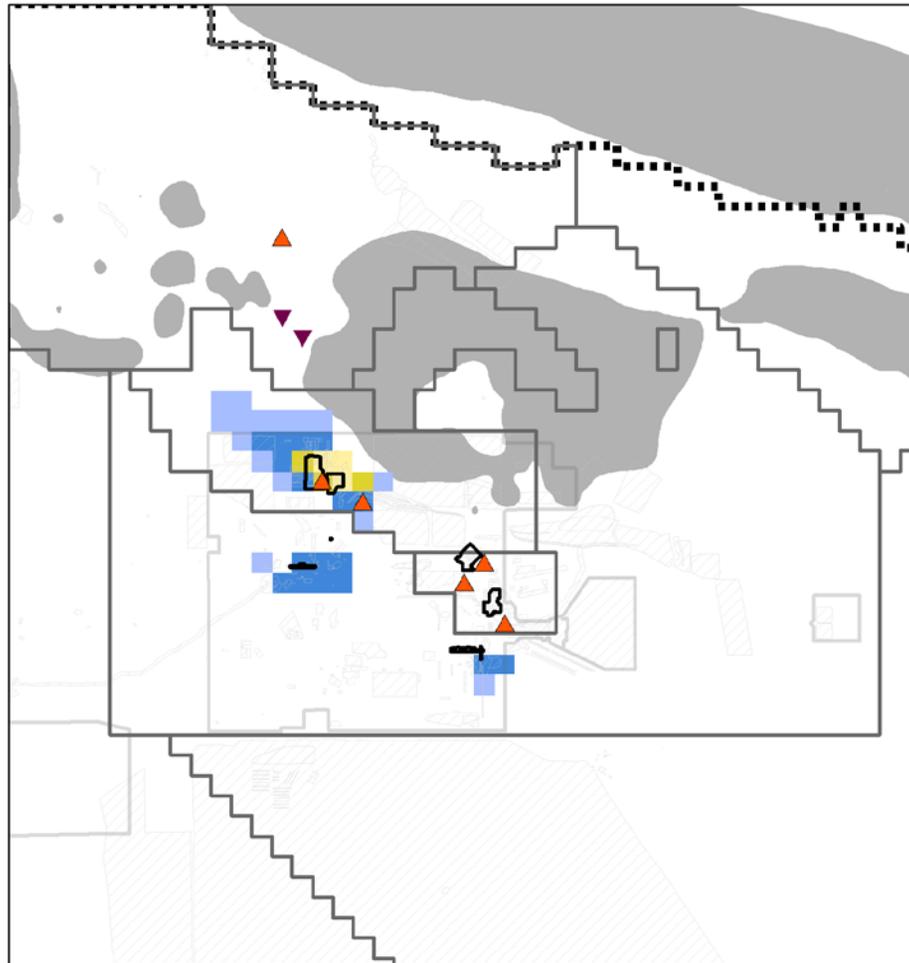
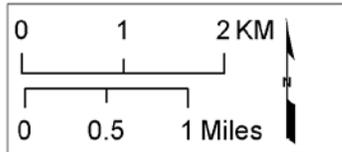
**1 Years
Uranium
Scenario 3
Continuing Source**



P2R_FS_u238_1.png (DoubleFigure_FS.mxd)

Figure B-156 - Plan view contours of the uranium plume at simulation time 1 years based on the scenario 3 simulation with a continuing source term.

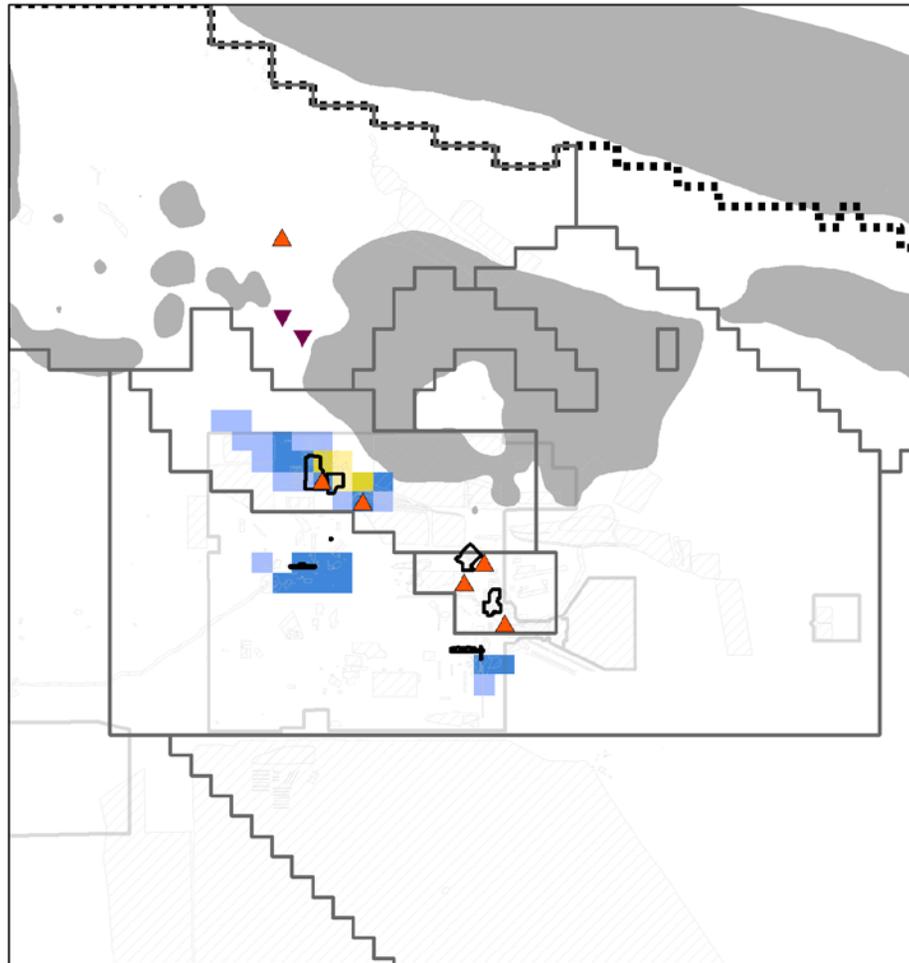
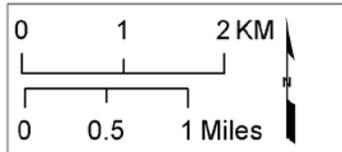
**2 Years
Uranium
Scenario 3
Continuing Source**



P2R_FS_u238_2.png (DoubleFigure_FS.mxd)

Figure B-157 - Plan view contours of the uranium plume at simulation time 2 years based on the scenario 3 simulation with a continuing source term.

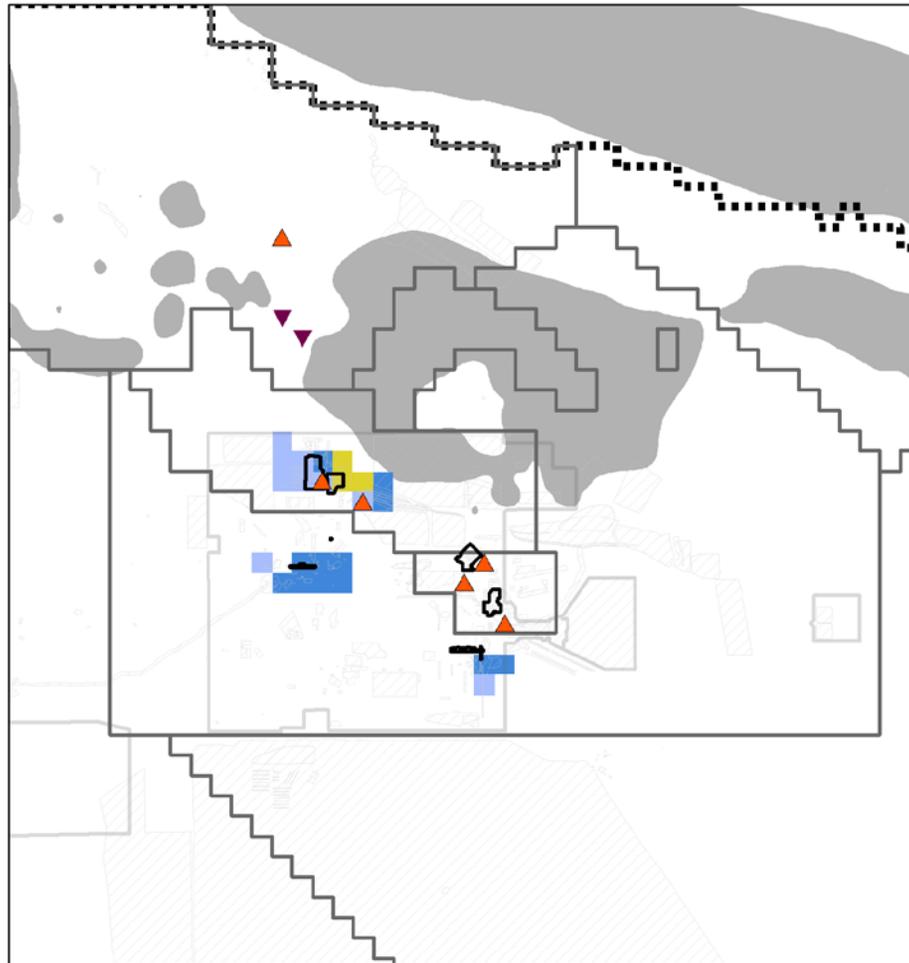
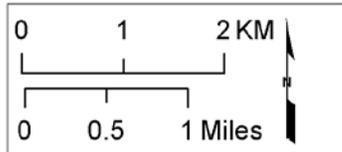
**5 Years
Uranium
Scenario 3
Continuing Source**



P2R_FS_u238_5.png (DoubleFigure_FS.mxd)

Figure B-158 - Plan view contours of the uranium plume at simulation time 5 years based on the scenario 3 simulation with a continuing source term.

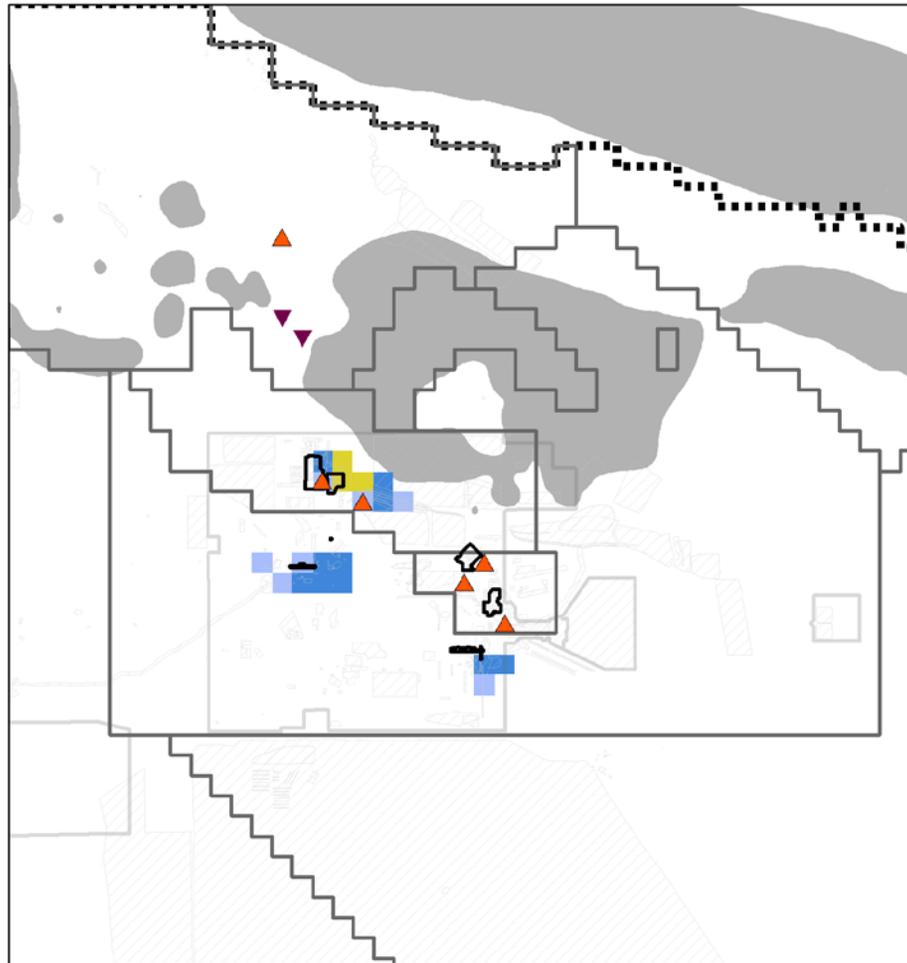
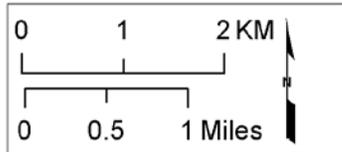
**10 Years
Uranium
Scenario 3
Continuing Source**



P2R_FS_u238_10.png (DoubleFigure_FS.mxd)

Figure B-159 - Plan view contours of the uranium plume at simulation time 10 years based on the scenario 3 simulation with a continuing source term.

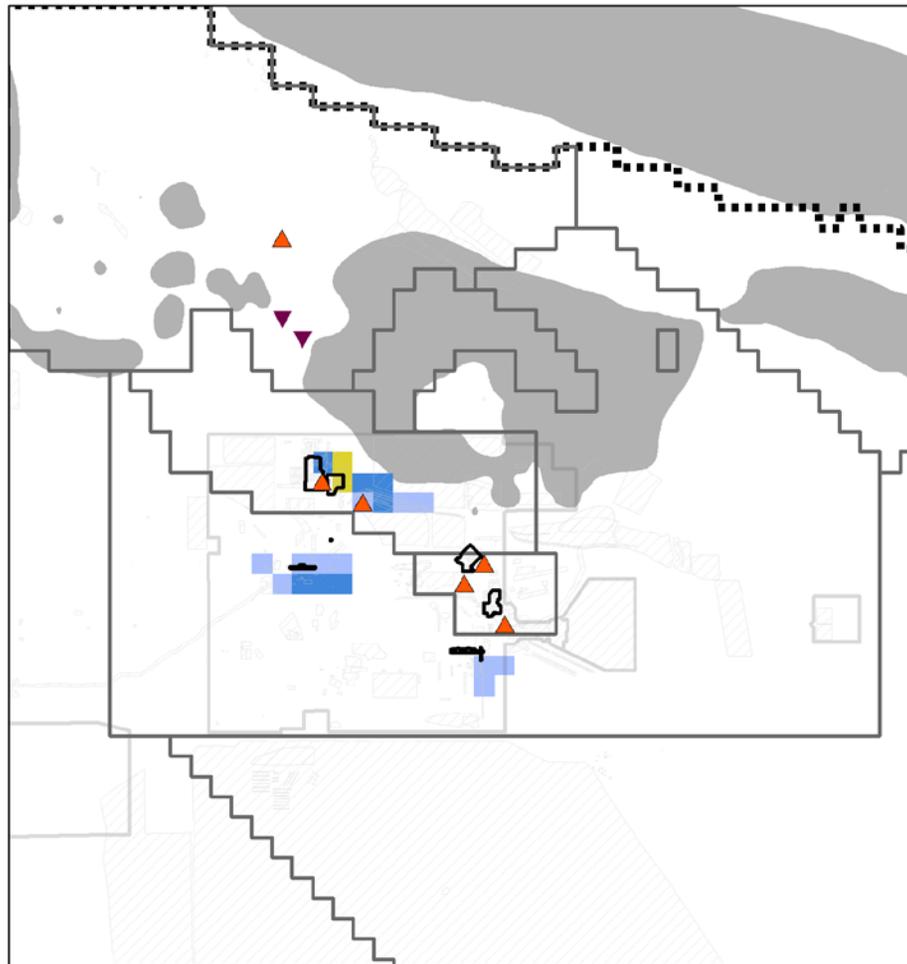
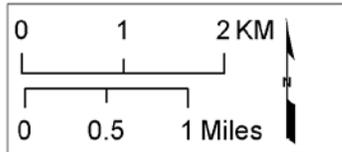
**15 Years
Uranium
Scenario 3
Continuing Source**



P2R_FS_u238_15.png (DoubleFigure_FS.mxd)

Figure B-160 - Plan view contours of the uranium plume at simulation time 15 years based on the scenario 3 simulation with a continuing source term.

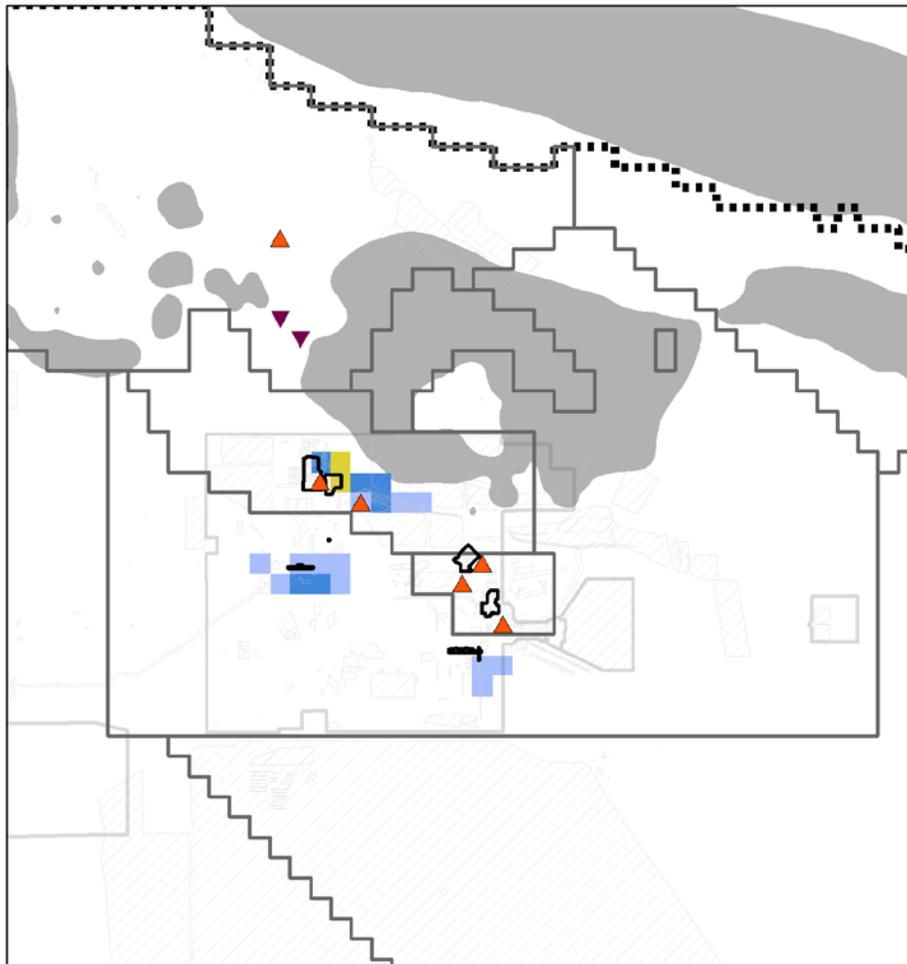
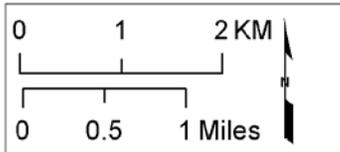
**20 Years
Uranium
Scenario 3
Continuing Source**



P2R_FS_u238_20.png (DoubleFigure_FS.mxd)

Figure B-161 - Plan view contours of the uranium plume at simulation time 20 years based on the scenario 3 simulation with a continuing source term.

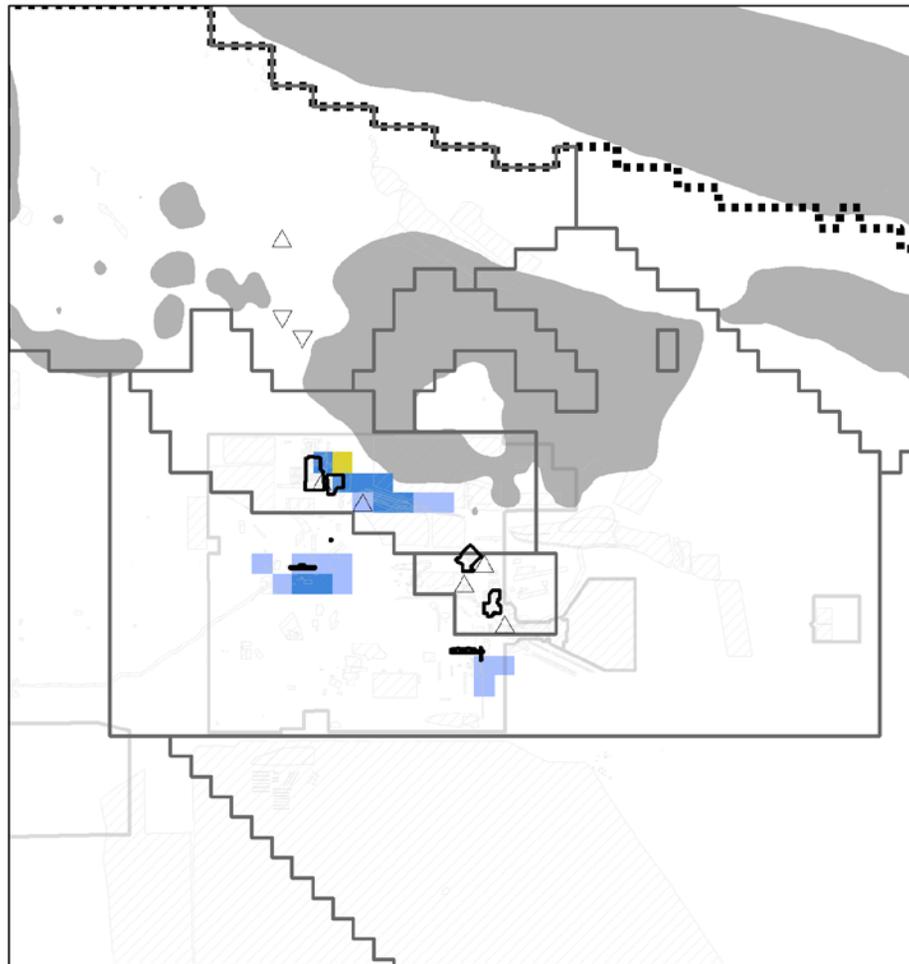
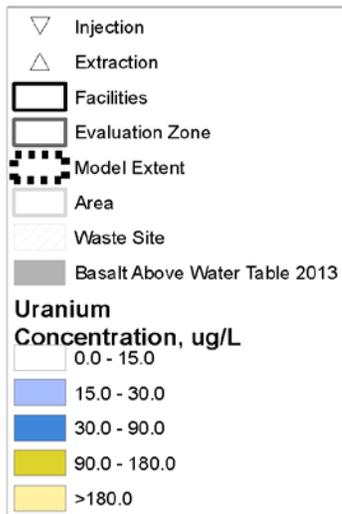
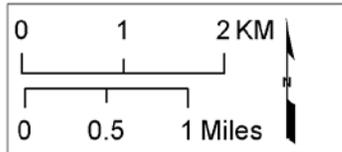
**25 Years
Uranium
Scenario 3
Continuing Source**



P2R_FS_u238_25.png (DoubleFigure_FS.mxd)

Figure B-162 - Plan view contours of the uranium plume at simulation time 25 years based on the scenario 3 simulation with a continuing source term.

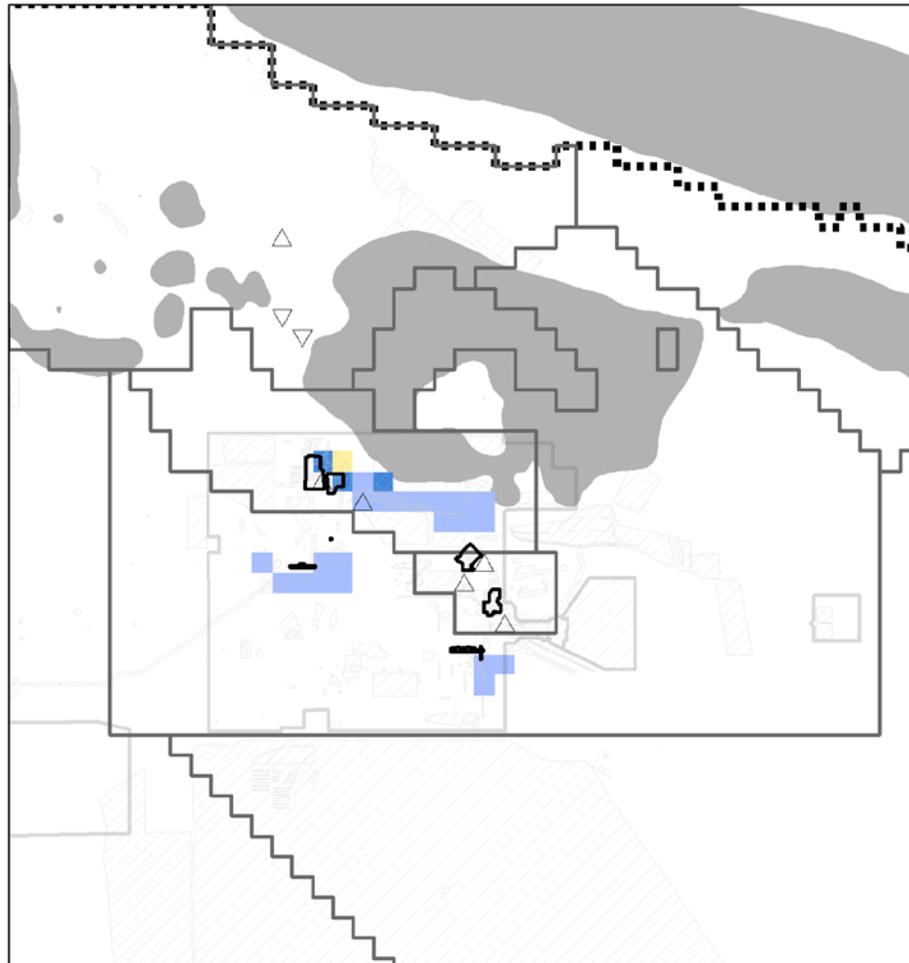
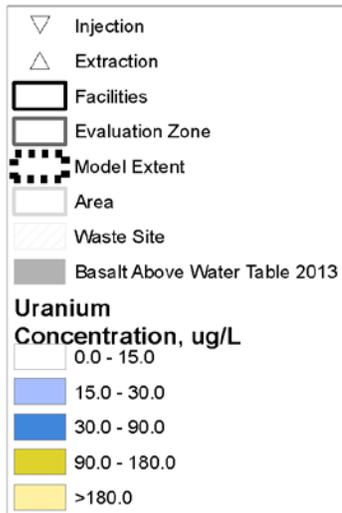
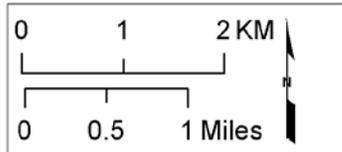
**30 Years
Uranium
Scenario 3
Continuing Source**



P2R_FS_u238_30.png (DoubleFigure_FS.mxd)

Figure B-163 - Plan view contours of the uranium plume at simulation time 30 years based on the scenario 3 simulation with a continuing source term.

**50 Years
Uranium
Scenario 3
Continuing Source**



P2R_FS_u238_50.png (DoubleFigure_FS.mxd)

Figure B-164 - Plan view contours of the uranium plume at simulation time 50 years based on the scenario 3 simulation with a continuing source term.

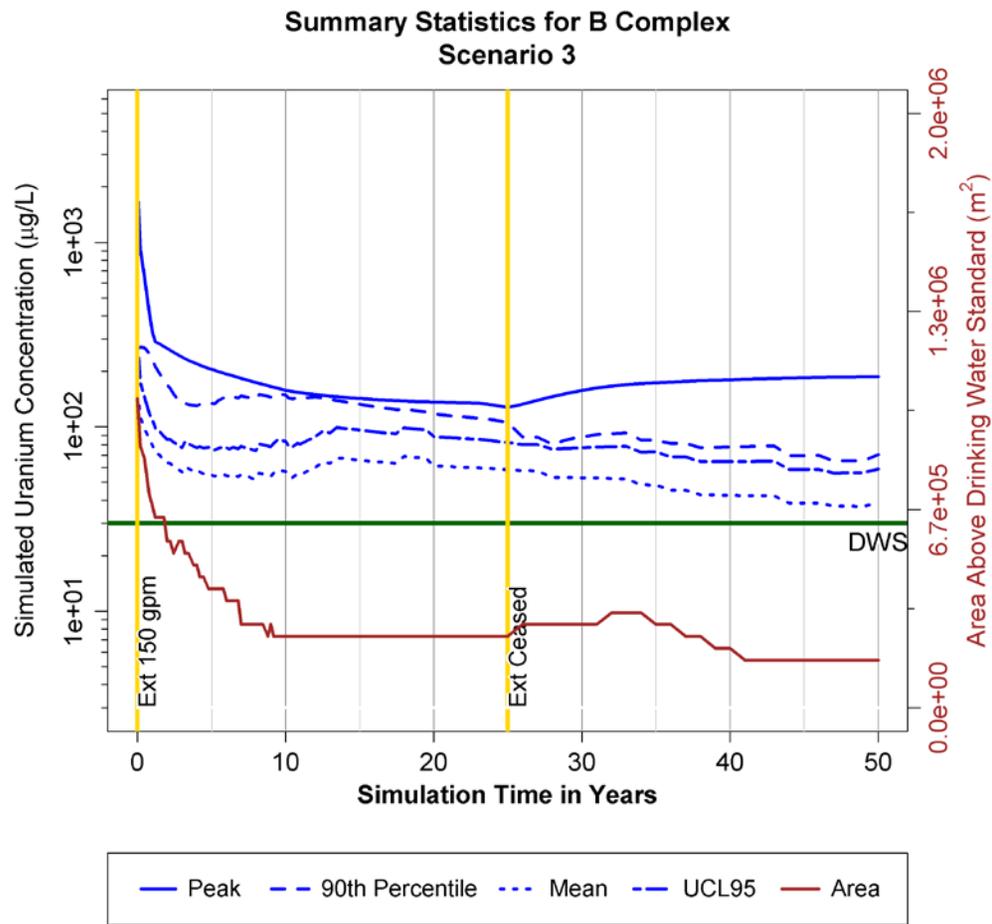


Figure B-165 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 3 simulation with a continuing source term.

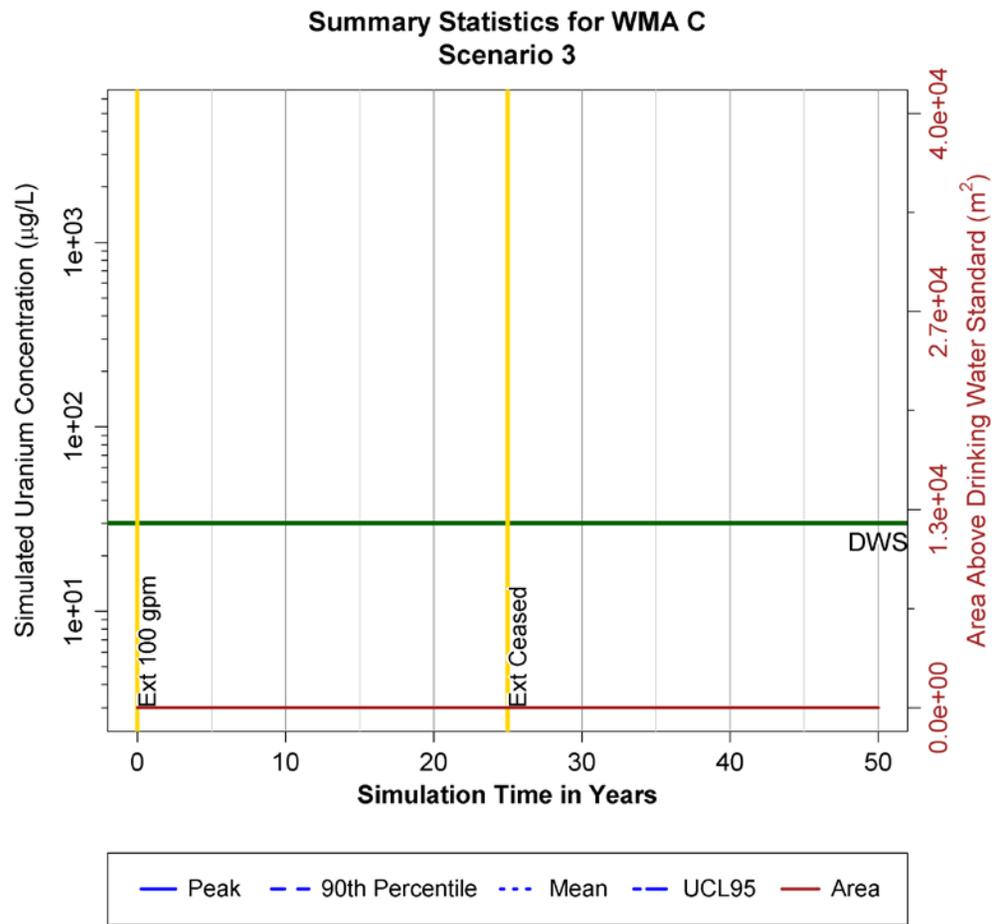


Figure B-166 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 3 simulation with a continuing source term.

Summary Statistics for Greater 200 East
Scenario 3

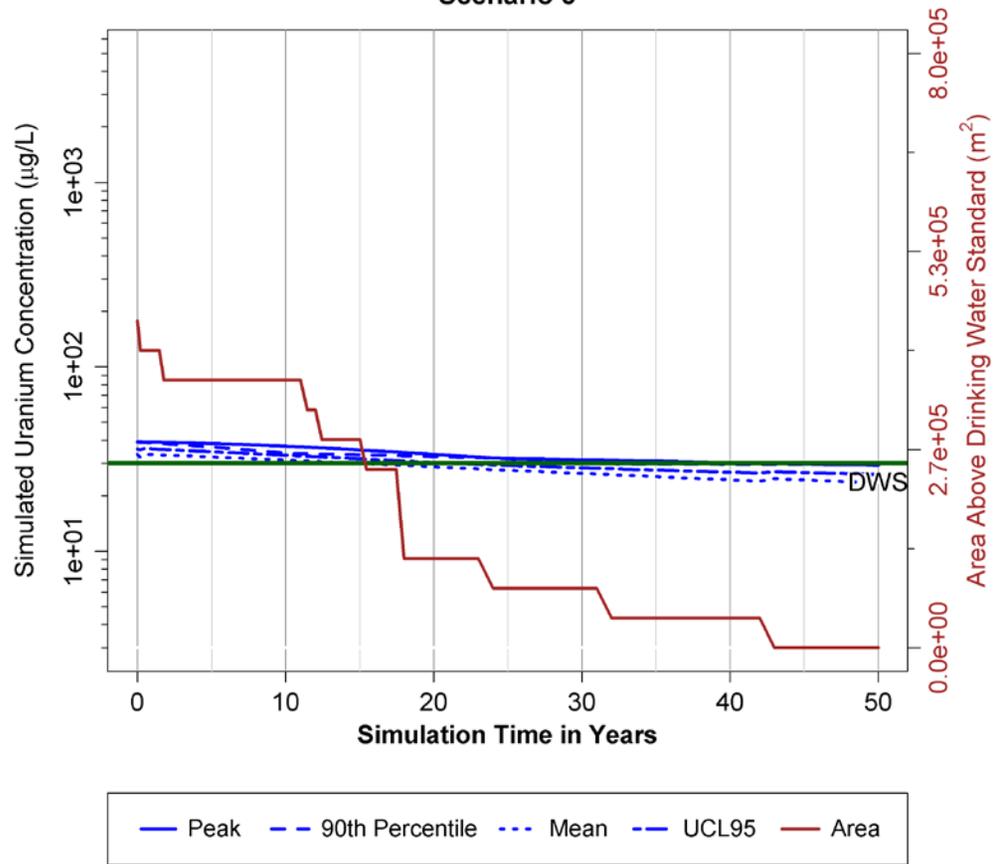


Figure B-167 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 3 simulation with a continuing source term.

Summary Statistics for Gable Gap Area
Scenario 3

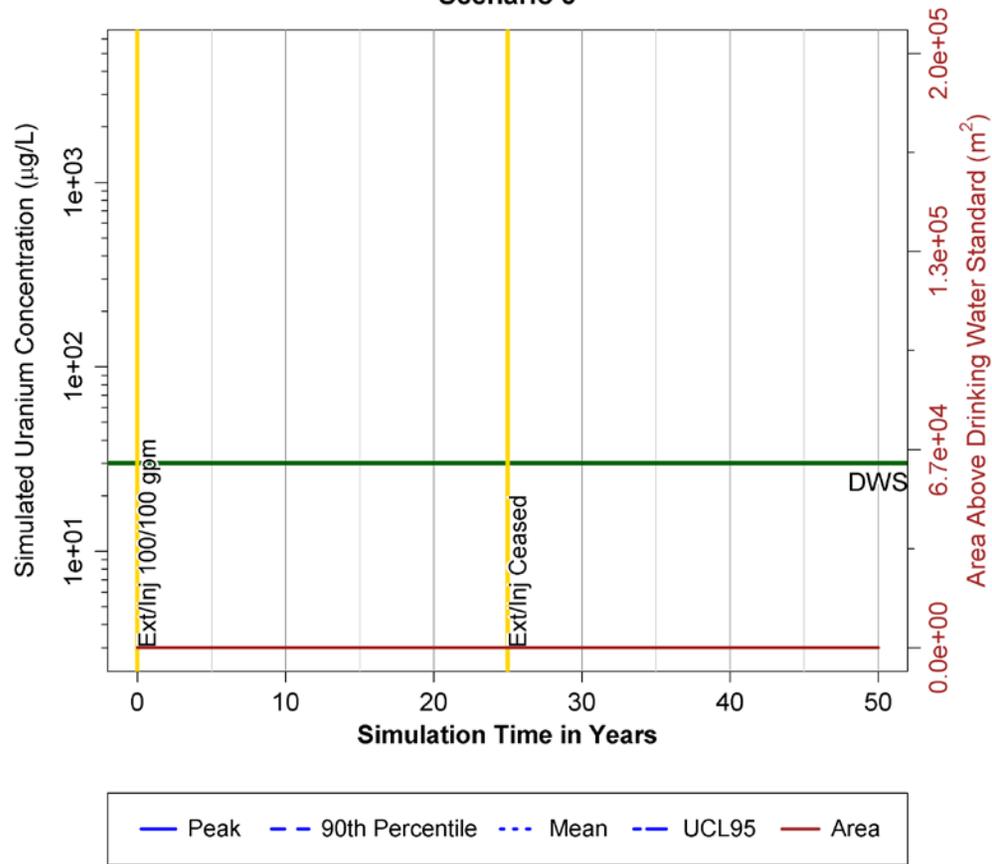
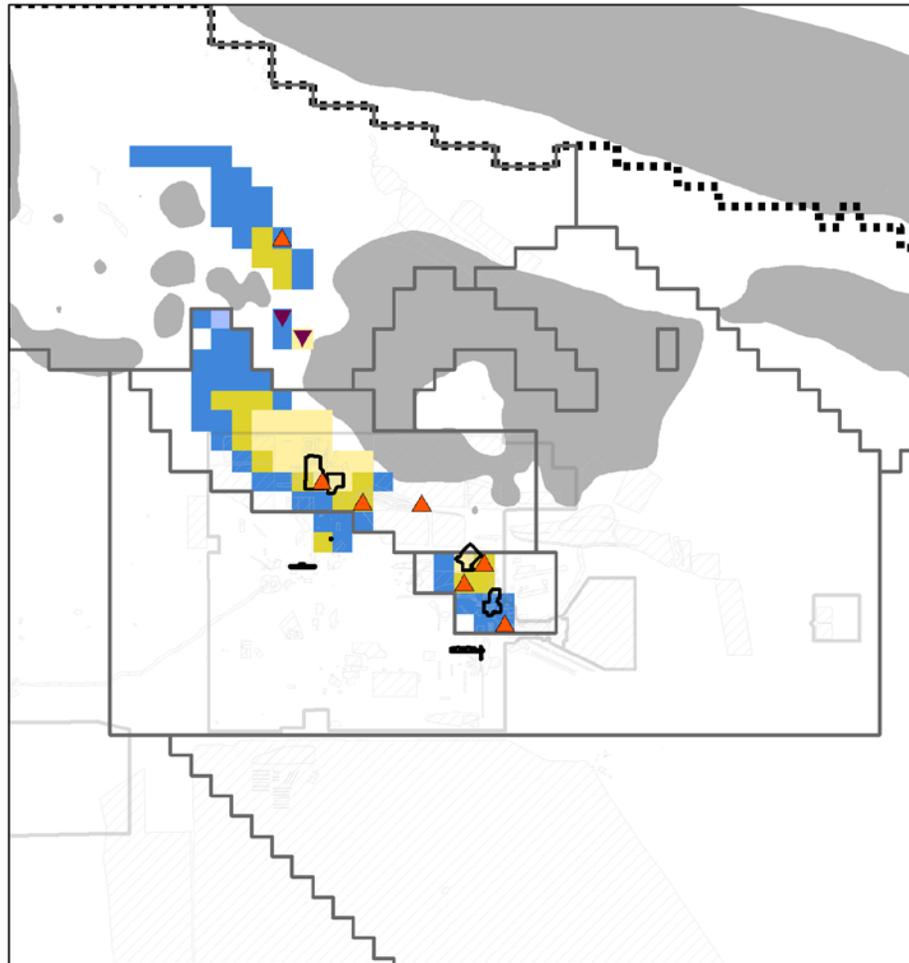
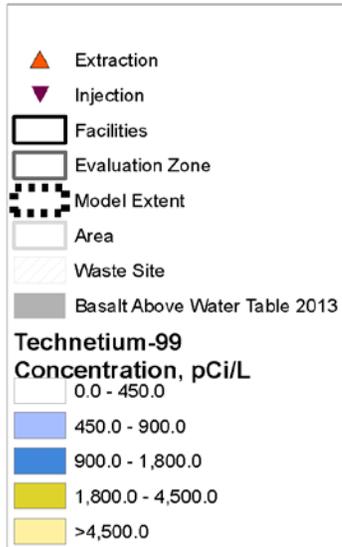
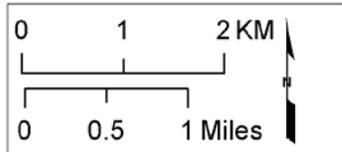


Figure B-168 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 3 simulation with a continuing source term.

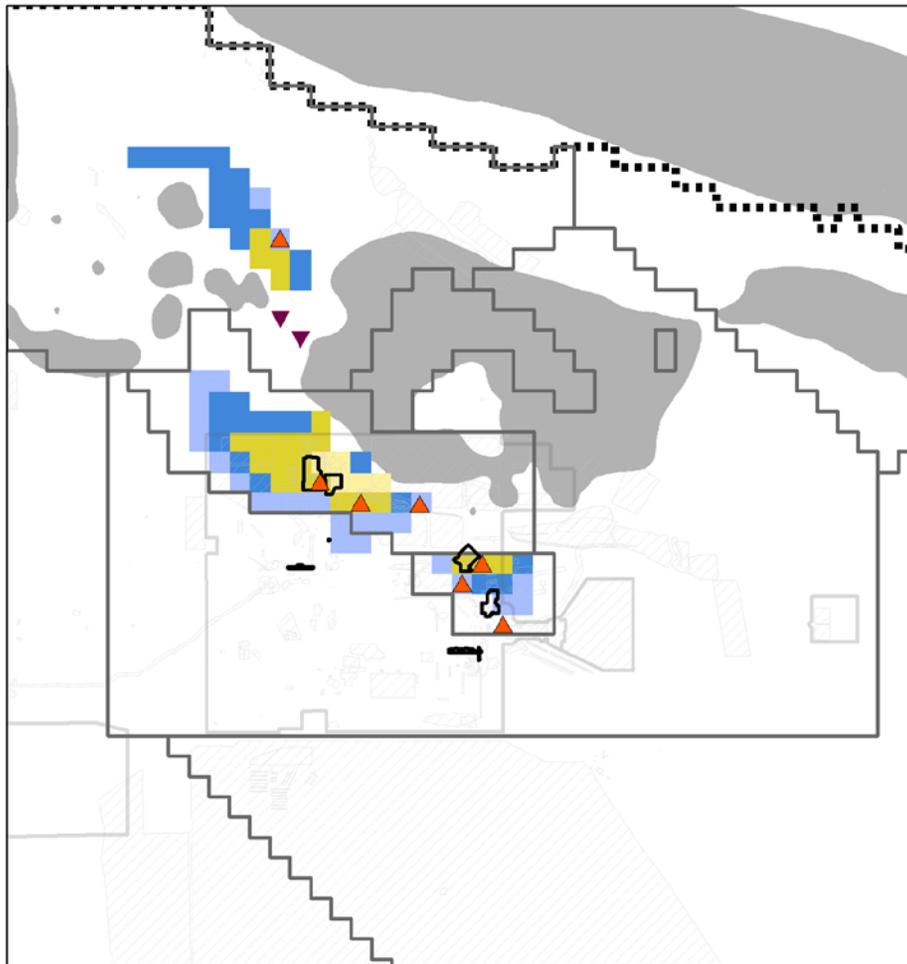
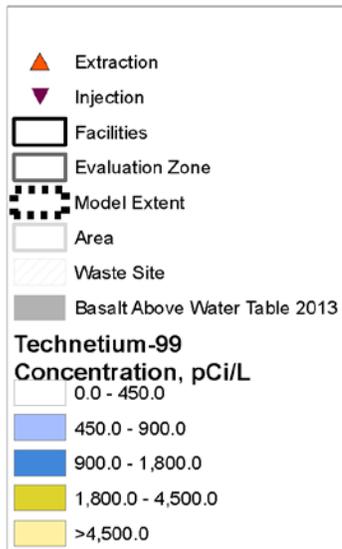
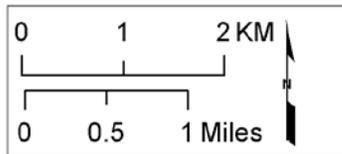
**0 Years
Technetium-99
Scenario 4**



P2R_FS_tc99_0.png (DoubleFigure_FS.mxd)

Figure B-169 - Plan view contours of the technetium-99 plume at simulation time 0 years based on the scenario 4 simulation.

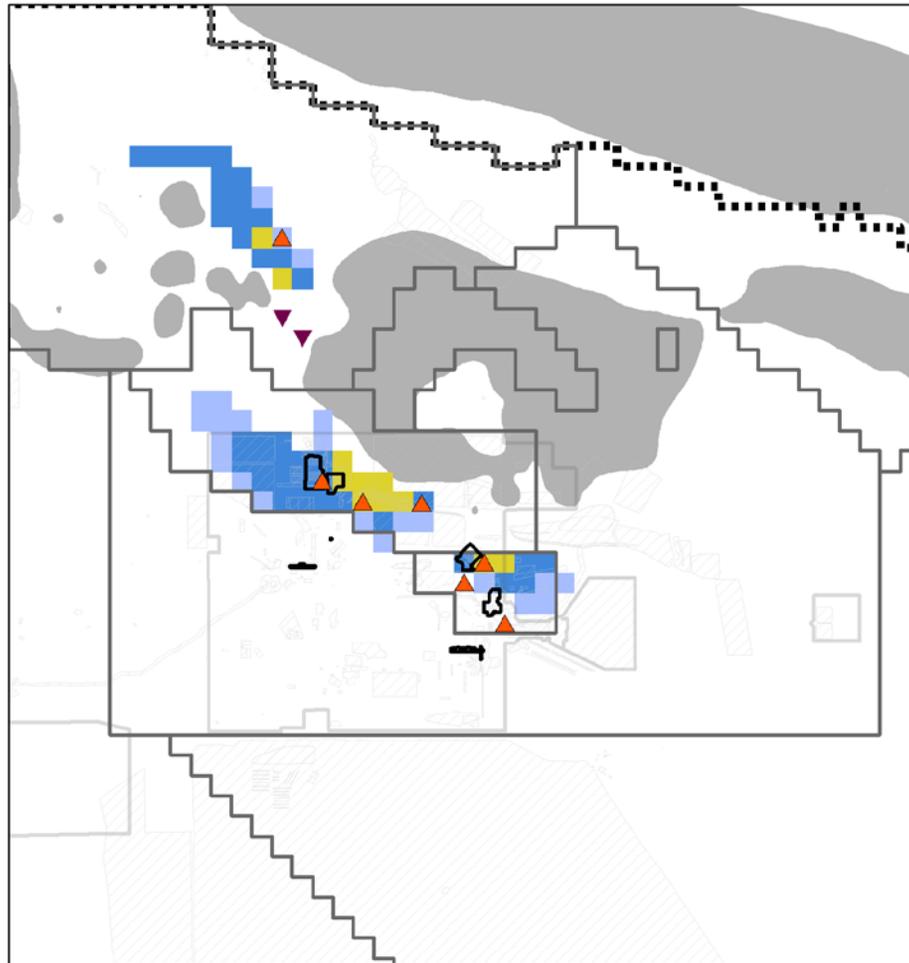
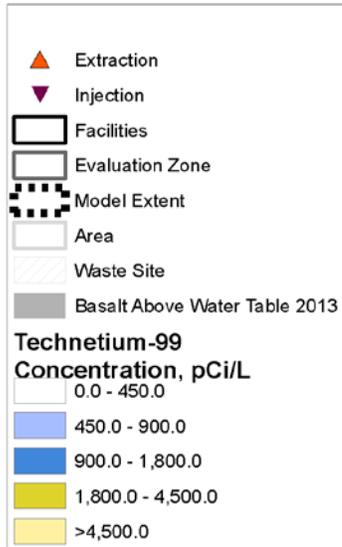
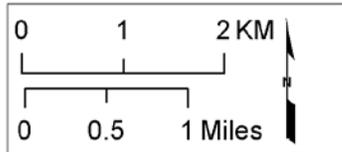
**1 Years
Technetium-99
Scenario 4**



P2R_FS_tc99_1.png (DoubleFigure_FS.mxd)

Figure B-170 - Plan view contours of the technetium-99 plume at simulation time 1 years based on the scenario 4 simulation.

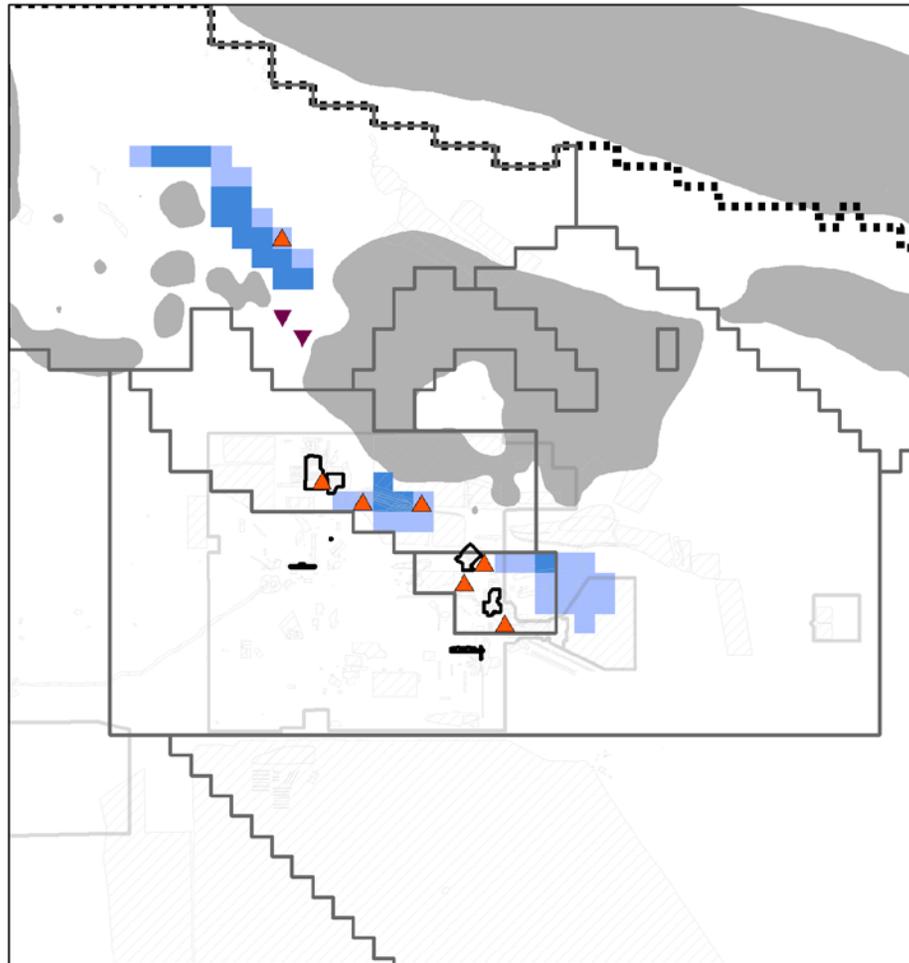
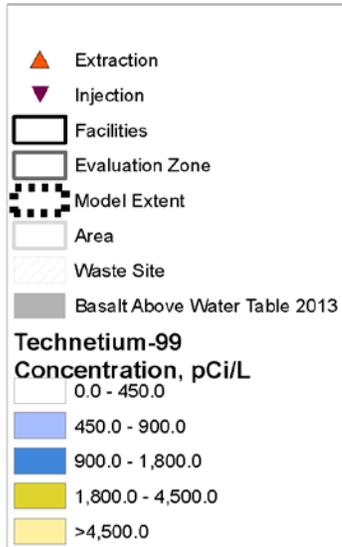
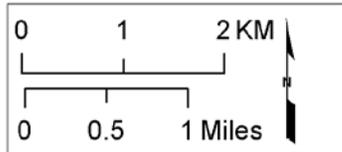
**2 Years
Technetium-99
Scenario 4**



P2R_FS_tc99_2.png (DoubleFigure_FS.mxd)

Figure B-171 - Plan view contours of the technetium-99 plume at simulation time 2 years based on the scenario 4 simulation.

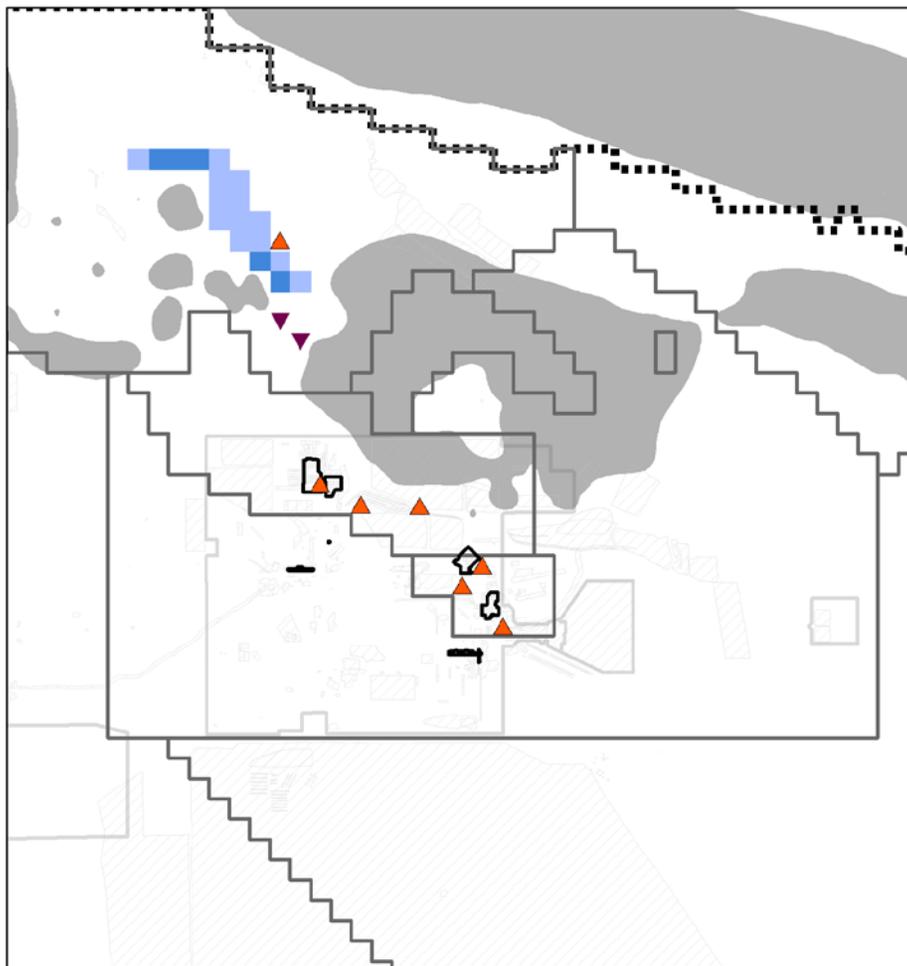
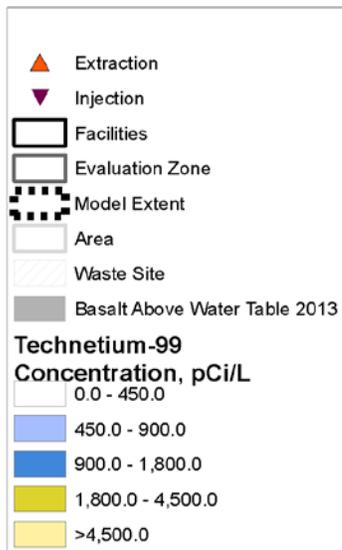
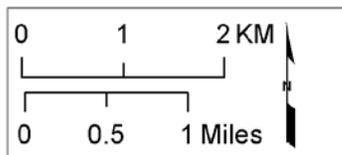
**5 Years
Technetium-99
Scenario 4**



P2R_FS_tc99_5.png (DoubleFigure_FS.mxd)

Figure B-172 - Plan view contours of the technetium-99 plume at simulation time 5 years based on the scenario 4 simulation.

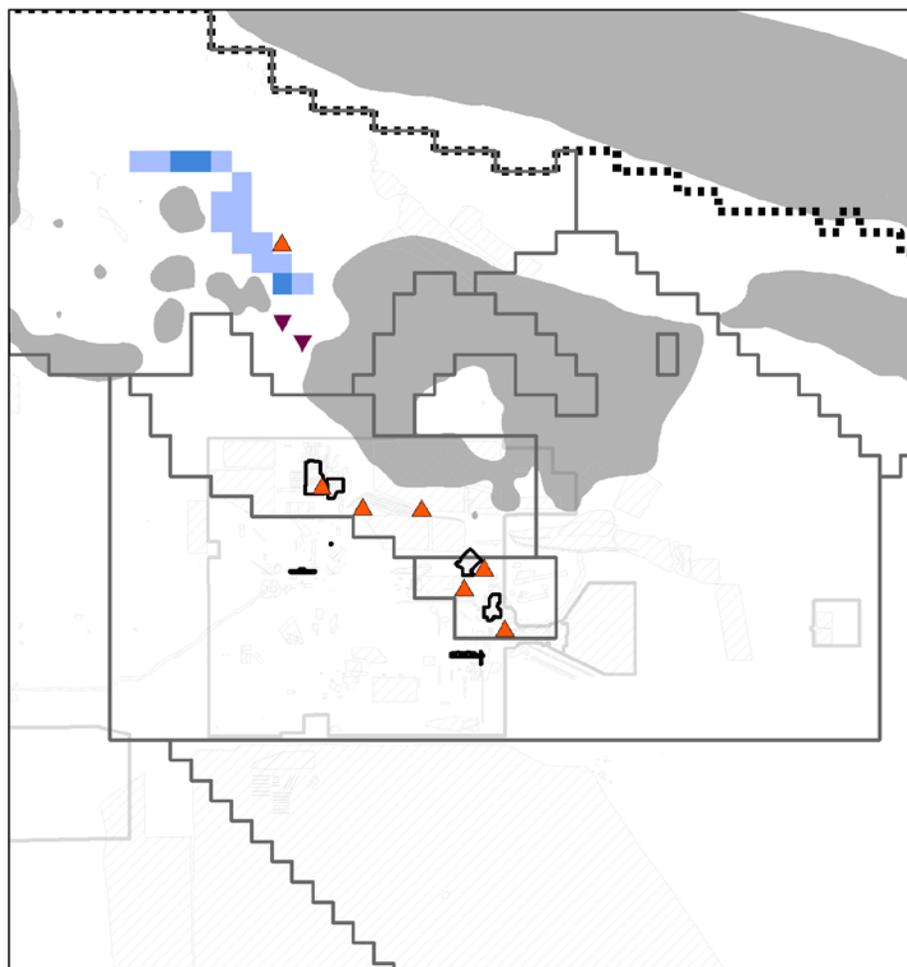
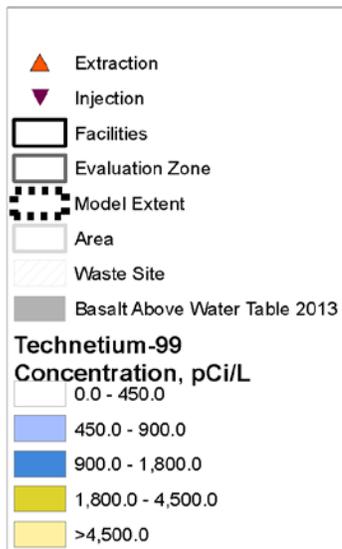
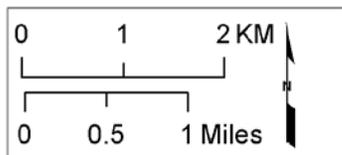
**10 Years
Technetium-99
Scenario 4**



P2R_FS_tc99_10.png (DoubleFigure_FS.mxd)

Figure B-173 - Plan view contours of the technetium-99 plume at simulation time 10 years based on the scenario 4 simulation.

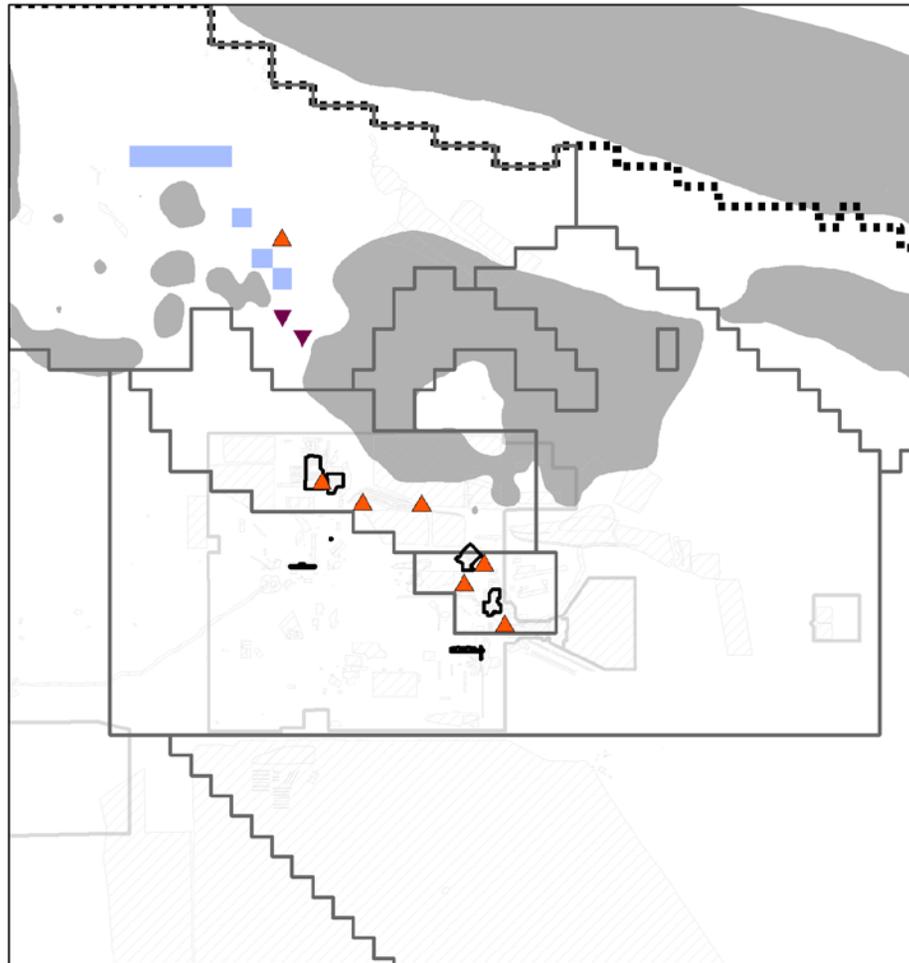
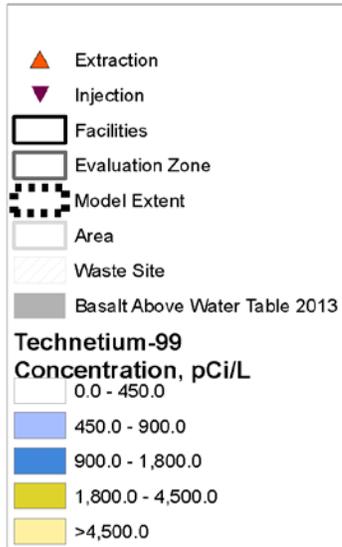
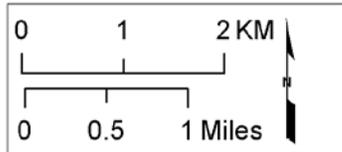
**15 Years
Technetium-99
Scenario 4**



P2R_FS_tc99_15.png (DoubleFigure_FS.mxd)

Figure B-174 - Plan view contours of the technetium-99 plume at simulation time 15 years based on the scenario 4 simulation.

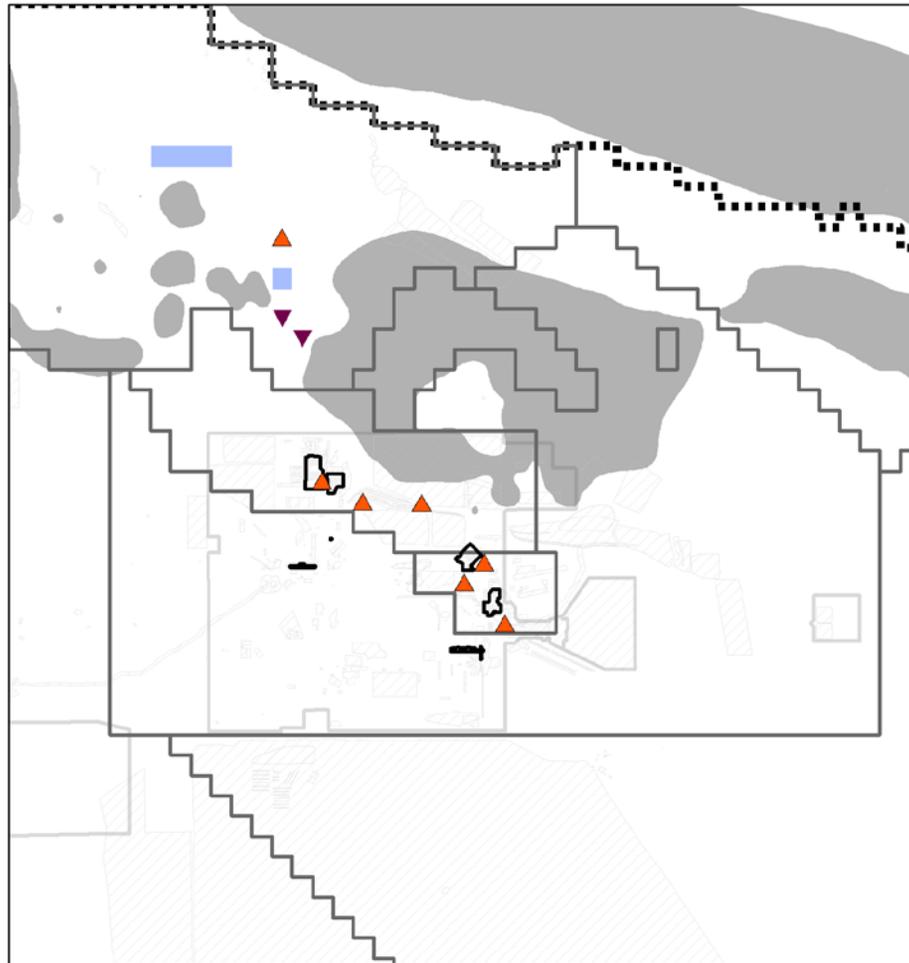
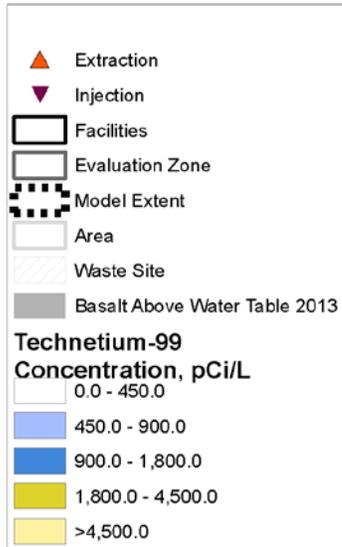
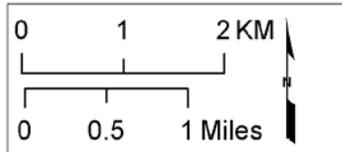
**20 Years
Technetium-99
Scenario 4**



P2R_FS_tc99_20.png (DoubleFigure_FS.mxd)

Figure B-175 - Plan view contours of the technetium-99 plume at simulation time 20 years based on the scenario 4 simulation.

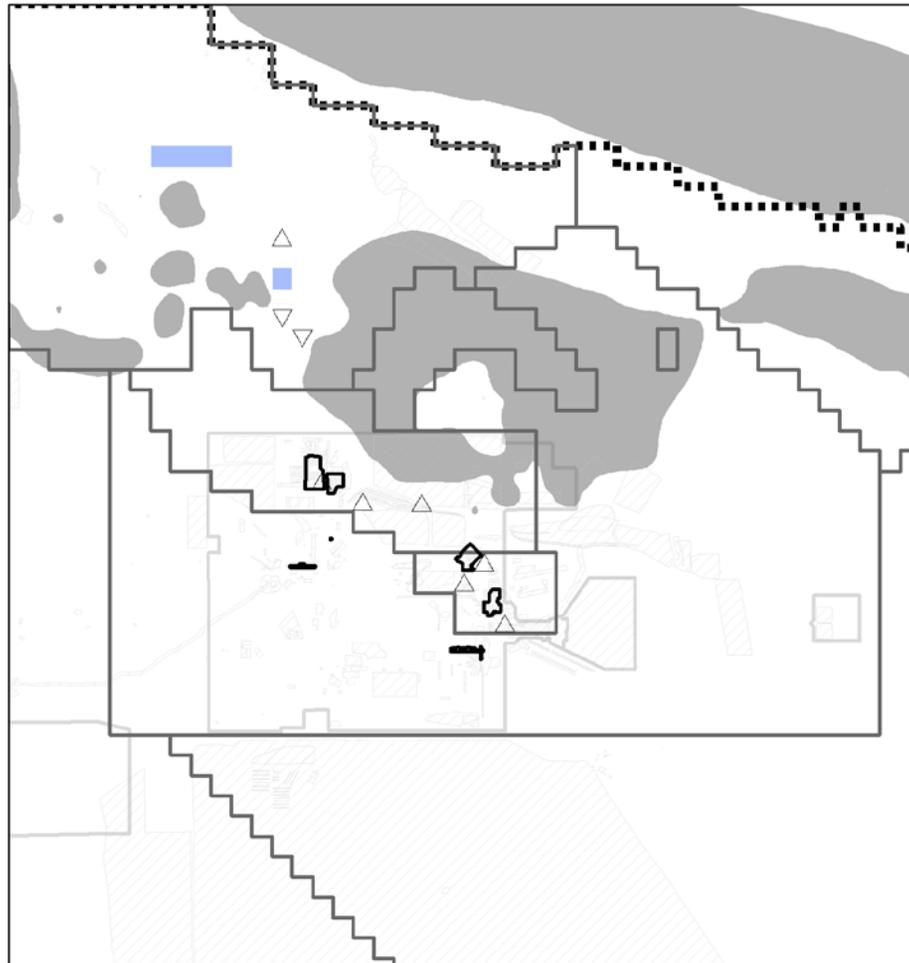
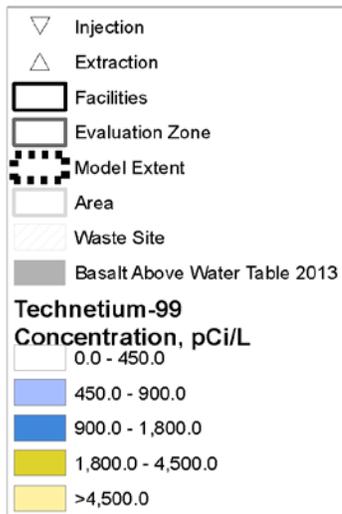
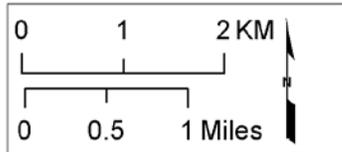
**25 Years
Technetium-99
Scenario 4**



P2R_FS_tc99_25.png (DoubleFigure_FS.mxd)

Figure B-176 - Plan view contours of the technetium-99 plume at simulation time 25 years based on the scenario 4 simulation.

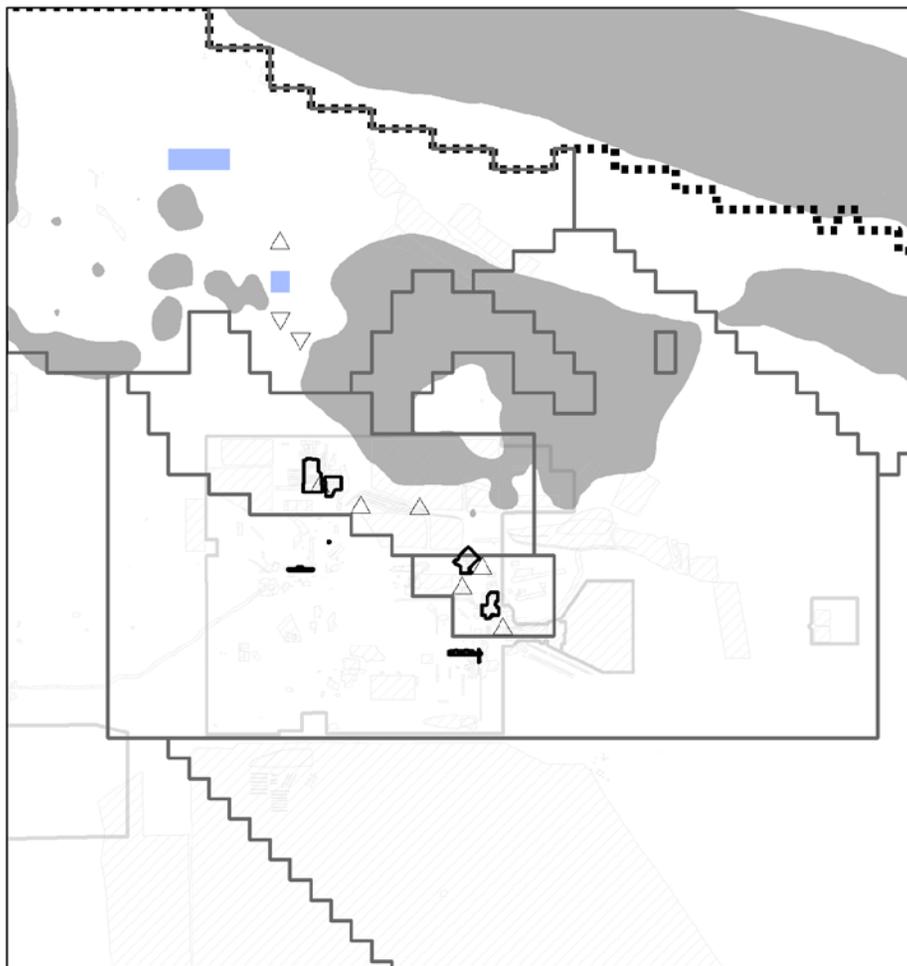
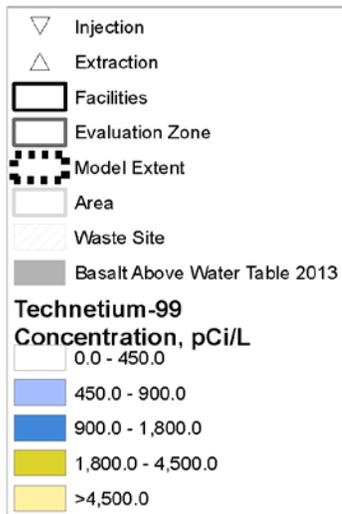
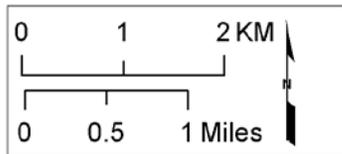
**30 Years
Technetium-99
Scenario 4**



P2R_FS_tc99_30.png (DoubleFigure_FS.mxd)

Figure B-177 - Plan view contours of the technetium-99 plume at simulation time 30 years based on the scenario 4 simulation.

**50 Years
Technetium-99
Scenario 4**



P2R_FS_tc99_50.png (DoubleFigure_FS.mxd)

Figure B-178 - Plan view contours of the technetium-99 plume at simulation time 50 years based on the scenario 4 simulation.

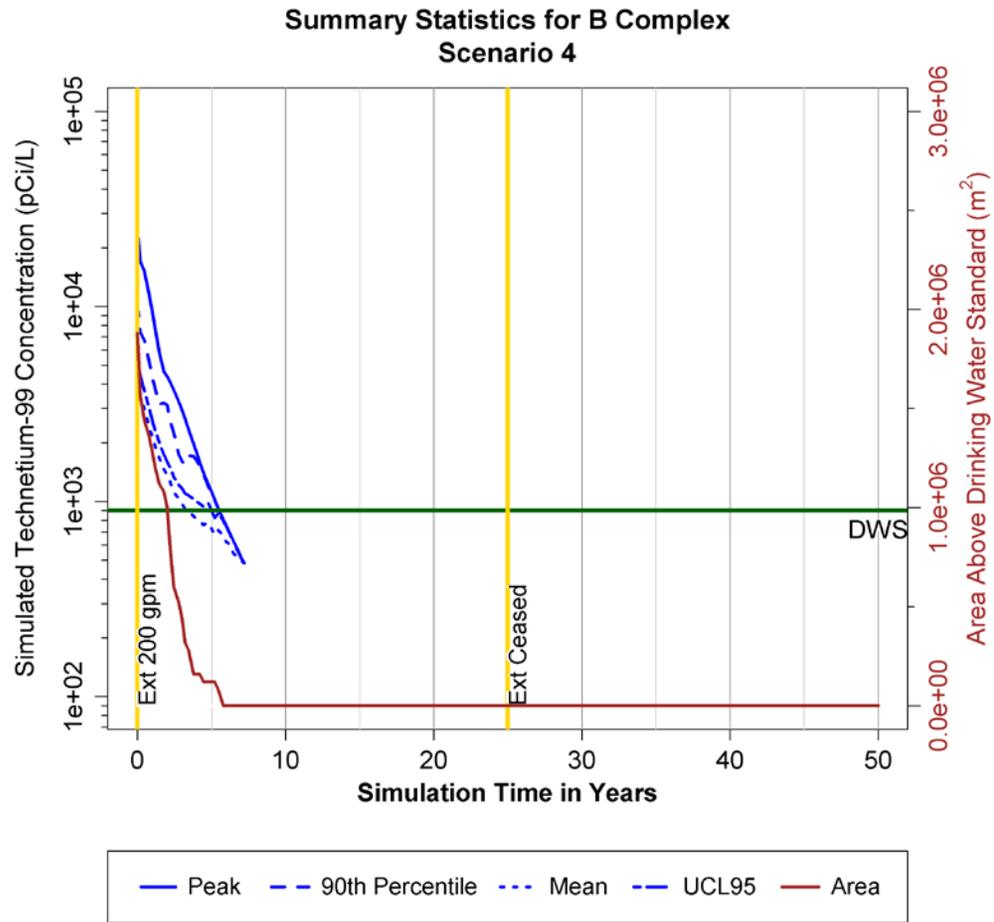


Figure B-179 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 4 simulation.

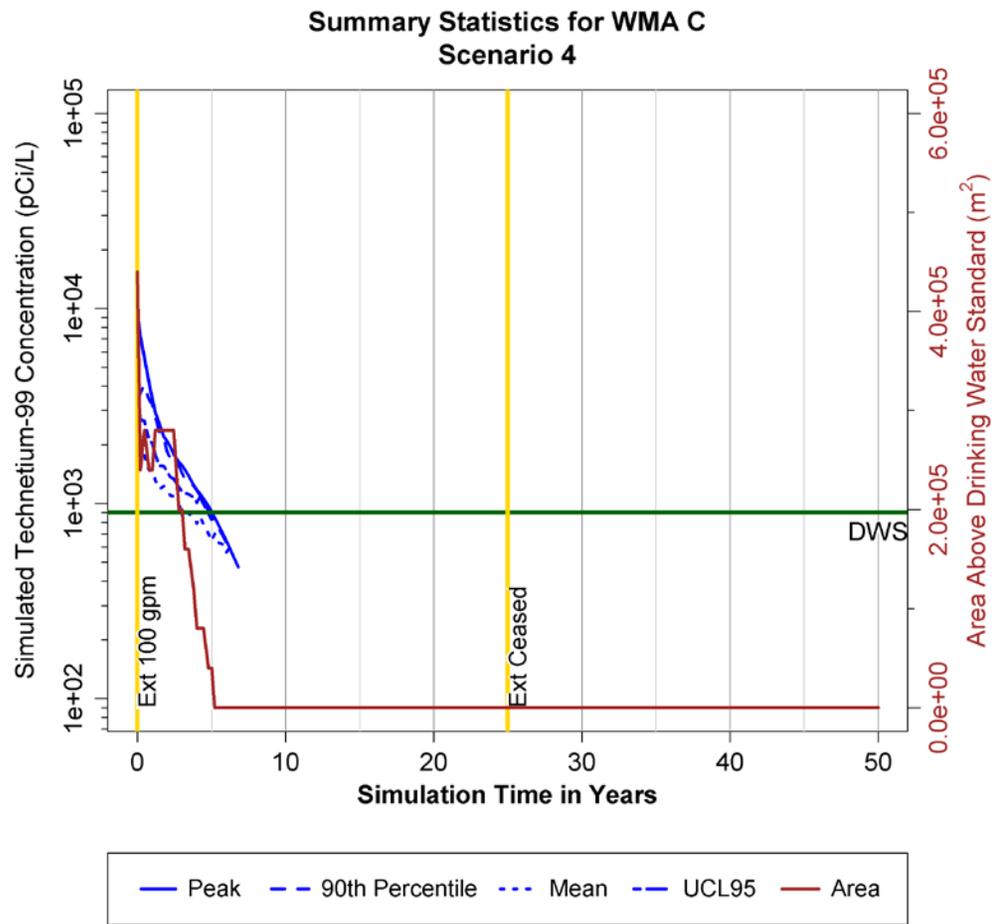


Figure B-180 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 4 simulation.

Summary Statistics for Greater 200 East
Scenario 4

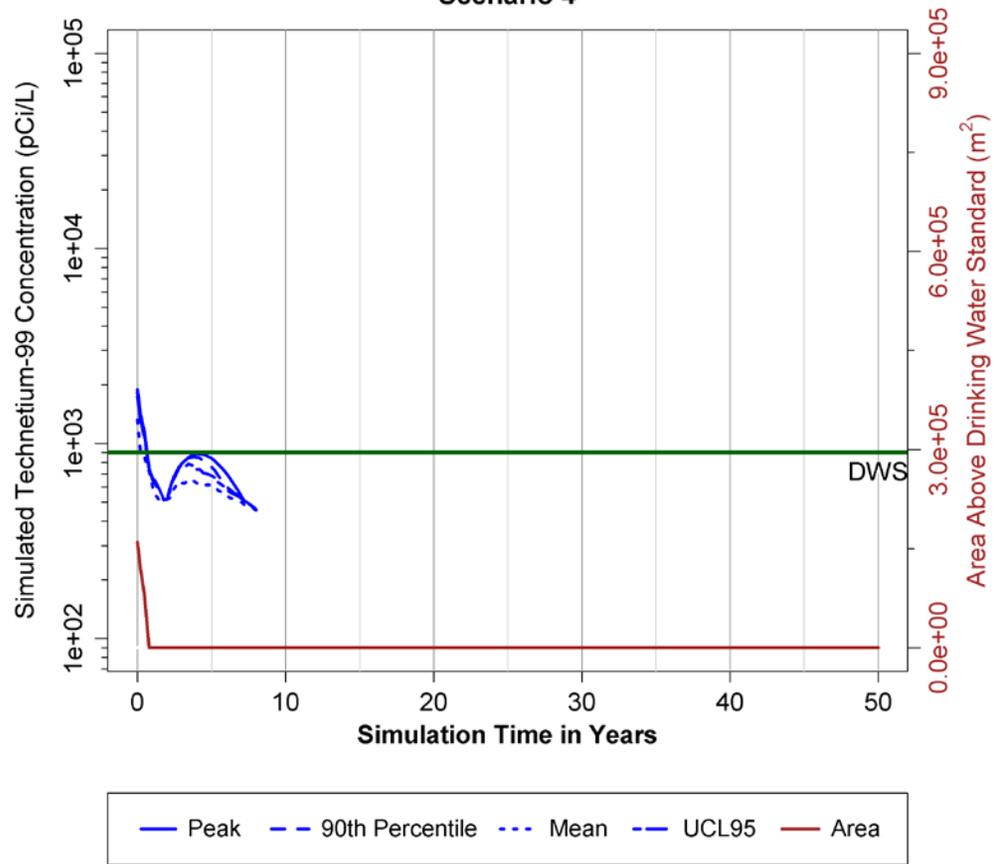


Figure B-181 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 4 simulation.

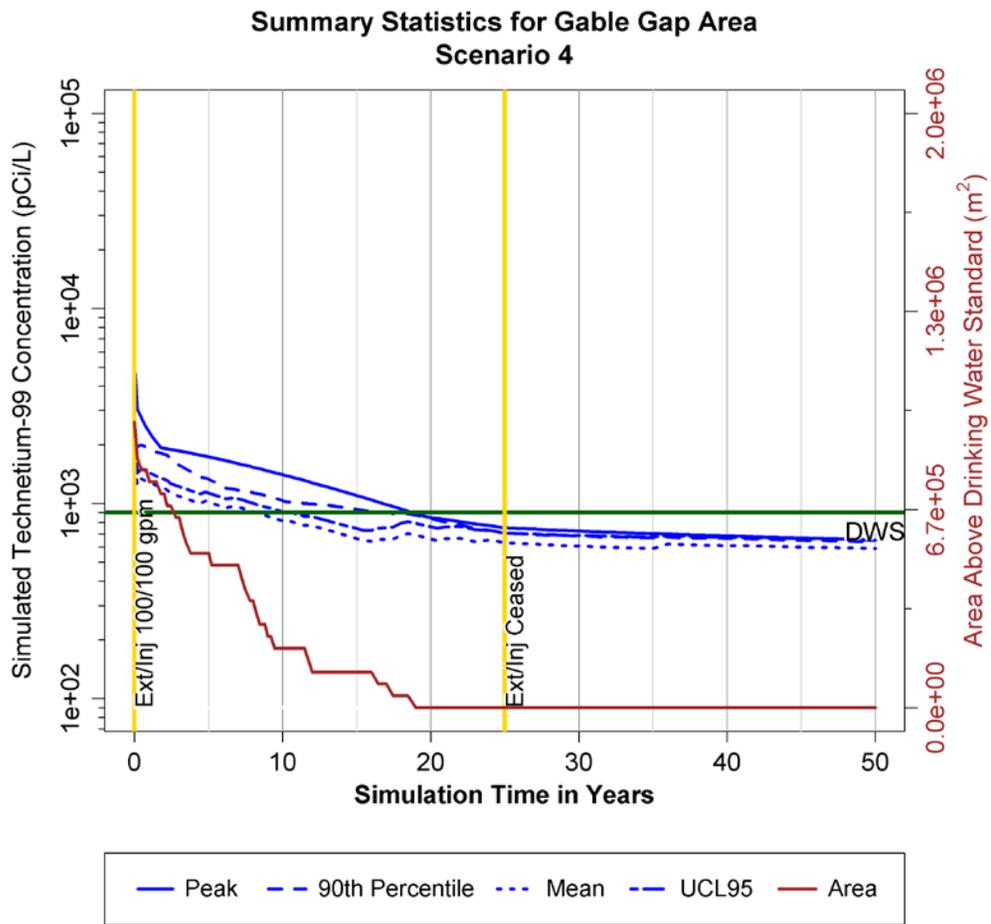
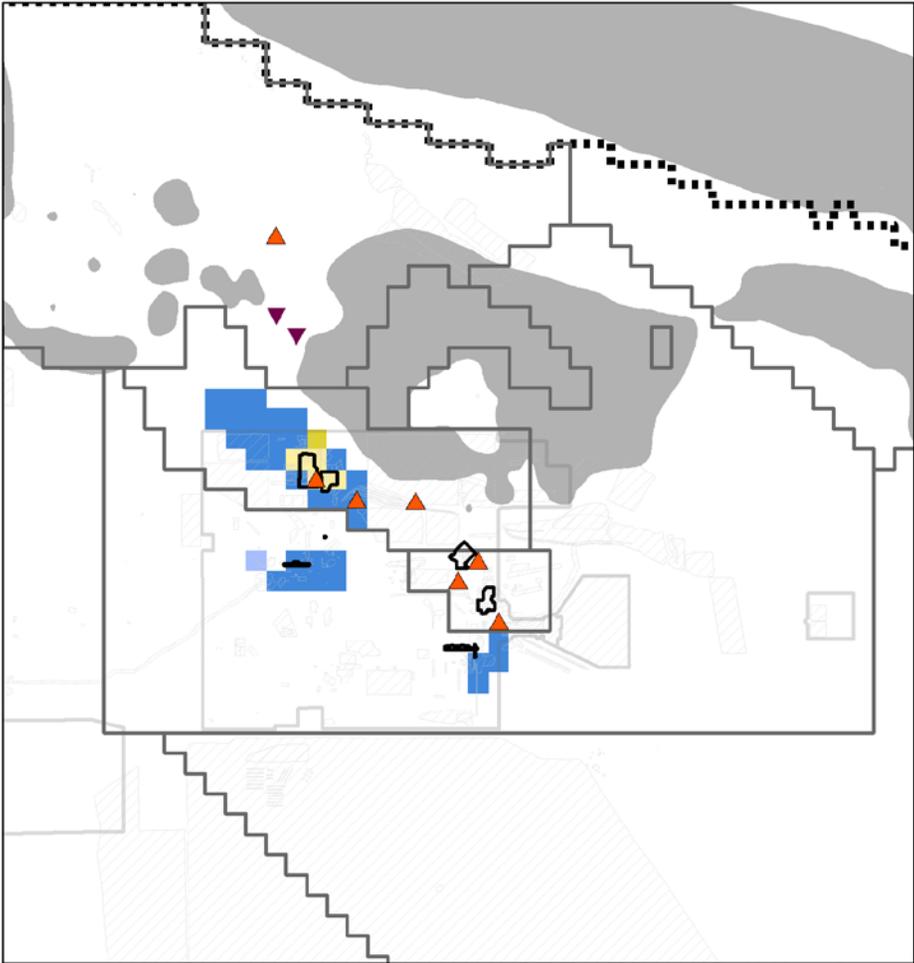
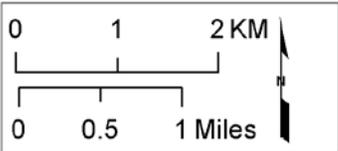


Figure B-182 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 4 simulation.

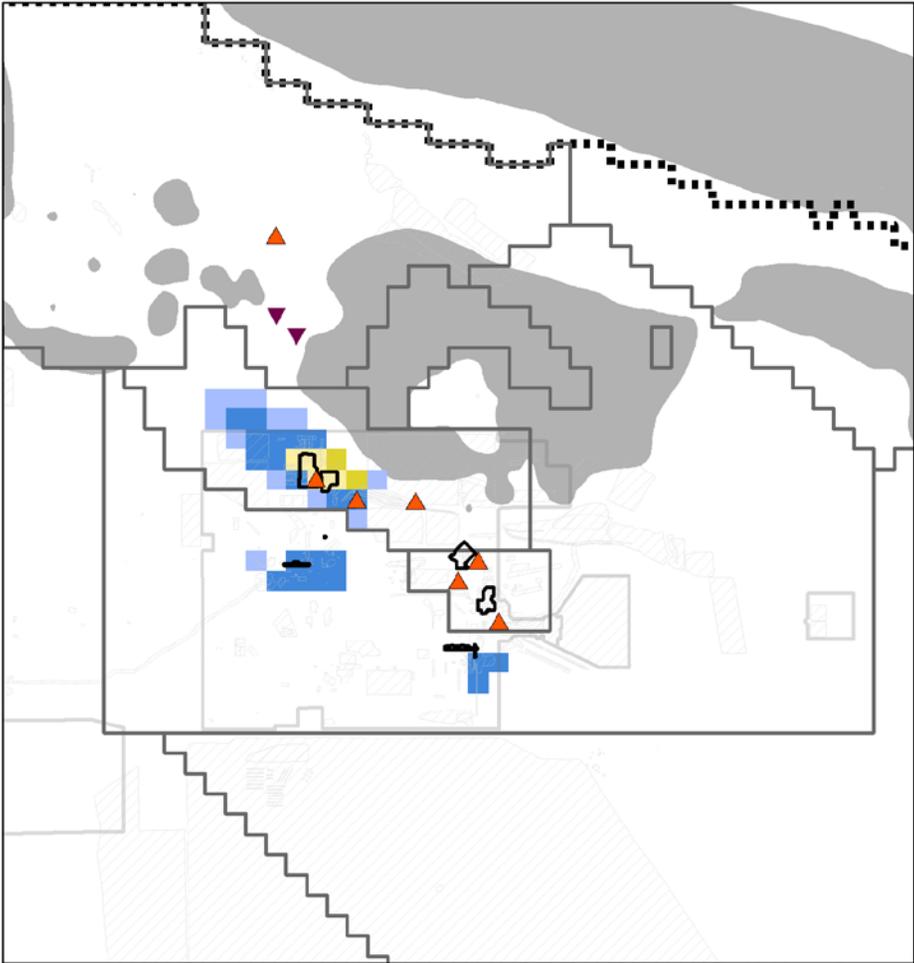
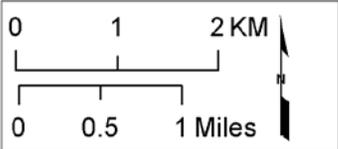
**0 Years
Uranium
Scenario 4**



P2R_FS_u238_0.png (DoubleFigure_FS.mxd)

Figure B-183 - Plan view contours of the uranium plume at simulation time 0 years based on the scenario 4 simulation.

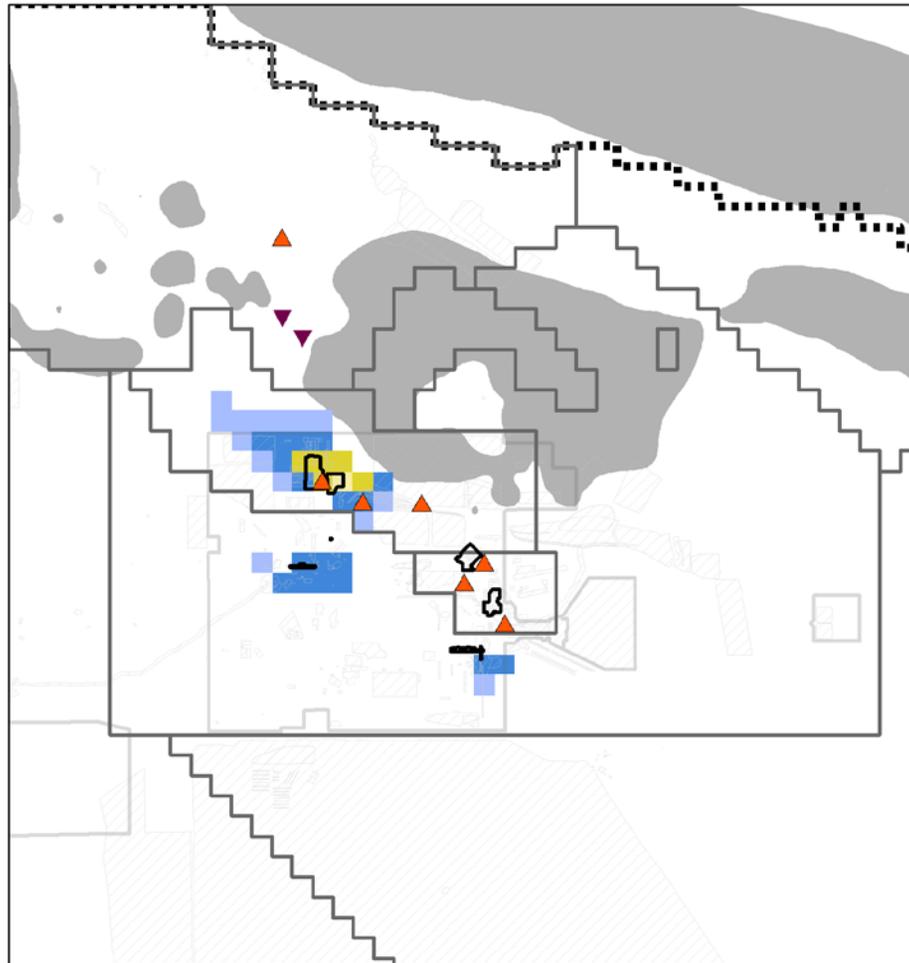
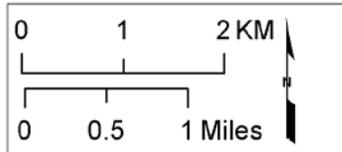
**1 Years
Uranium
Scenario 4**



P2R_FS_u238_1.png (DoubleFigure_FS.mxd)

Figure B-184 - Plan view contours of the uranium plume at simulation time 1 years based on the scenario 4 simulation.

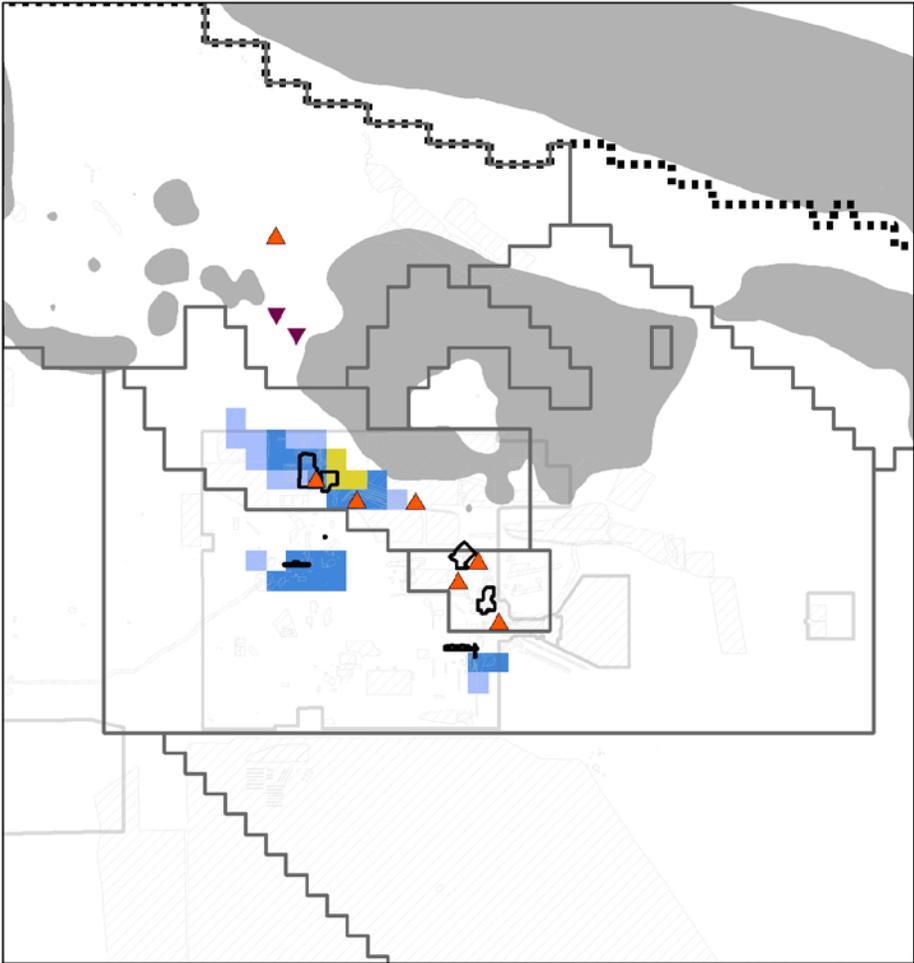
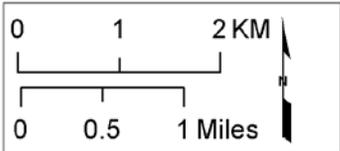
**2 Years
Uranium
Scenario 4**



P2R_FS_u238_2.png (DoubleFigure_FS.mxd)

Figure B-185 - Plan view contours of the uranium plume at simulation time 2 years based on the scenario 4 simulation.

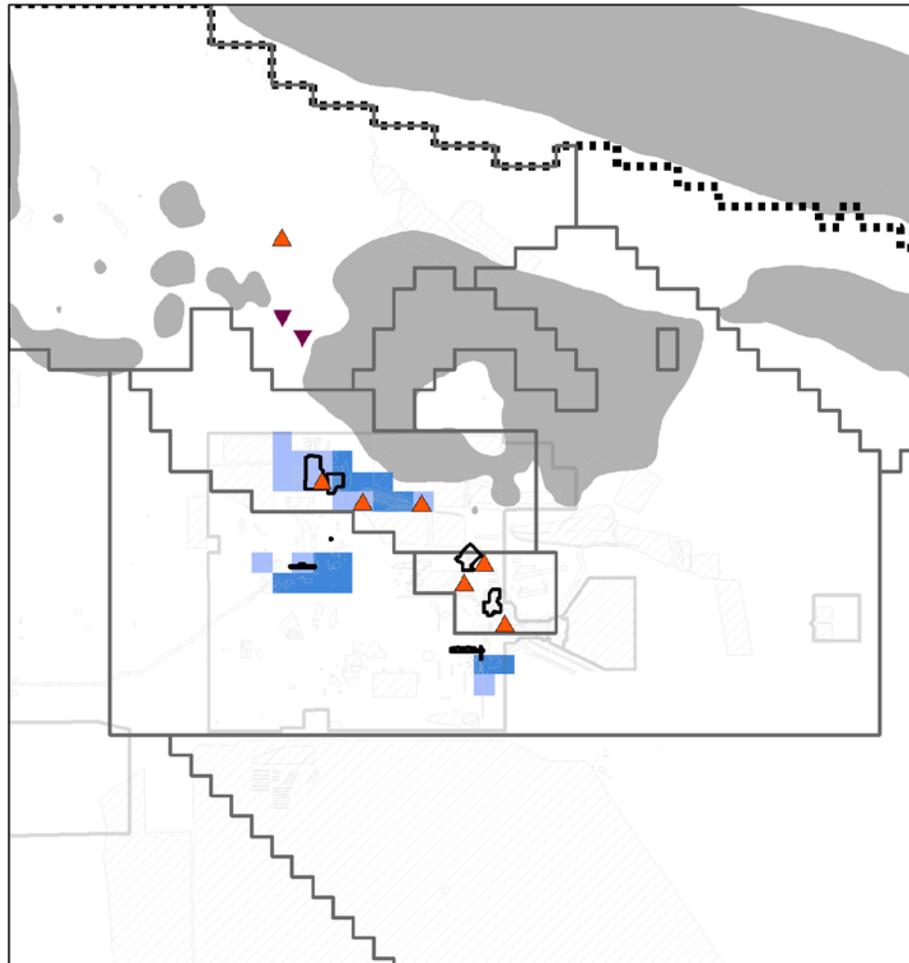
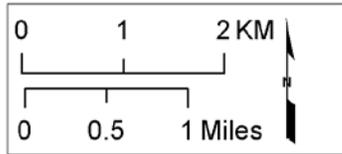
**5 Years
Uranium
Scenario 4**



P2R_FS_u238_5.png (DoubleFigure_FS.mxd)

Figure B-186 - Plan view contours of the uranium plume at simulation time 5 years based on the scenario 4 simulation.

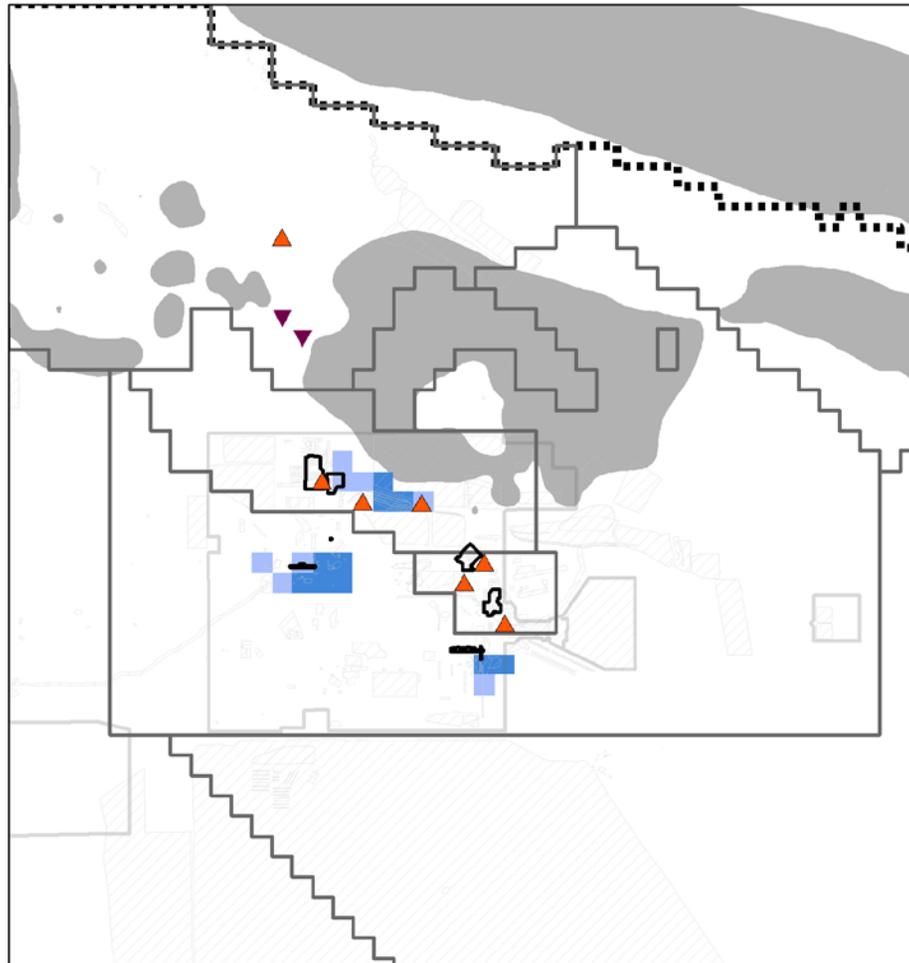
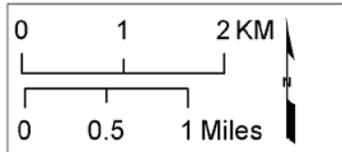
**10 Years
Uranium
Scenario 4**



P2R_FS_u238_10.png (DoubleFigure_FS.mxd)

Figure B-187 - Plan view contours of the uranium plume at simulation time 10 years based on the scenario 4 simulation.

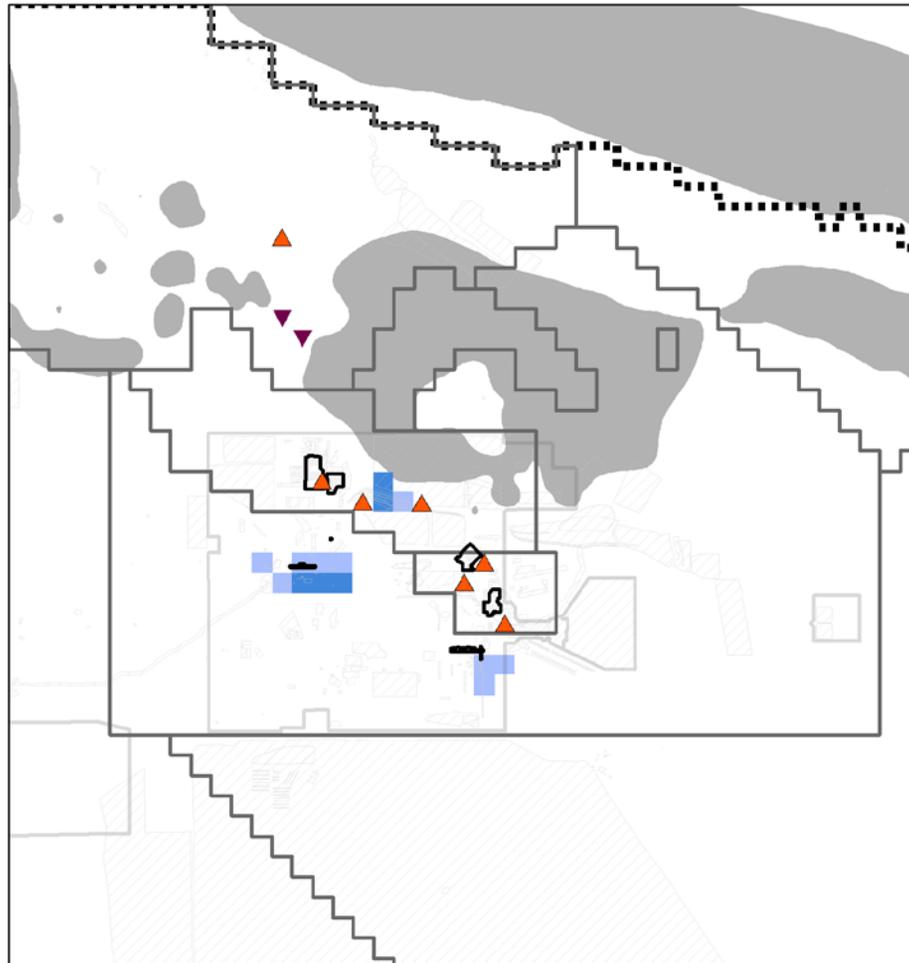
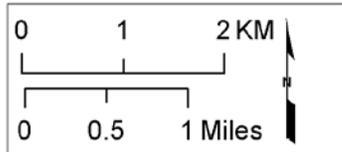
**15 Years
Uranium
Scenario 4**



P2R_FS_u238_15.png (DoubleFigure_FS.mxd)

Figure B-188 - Plan view contours of the uranium plume at simulation time 15 years based on the scenario 4 simulation.

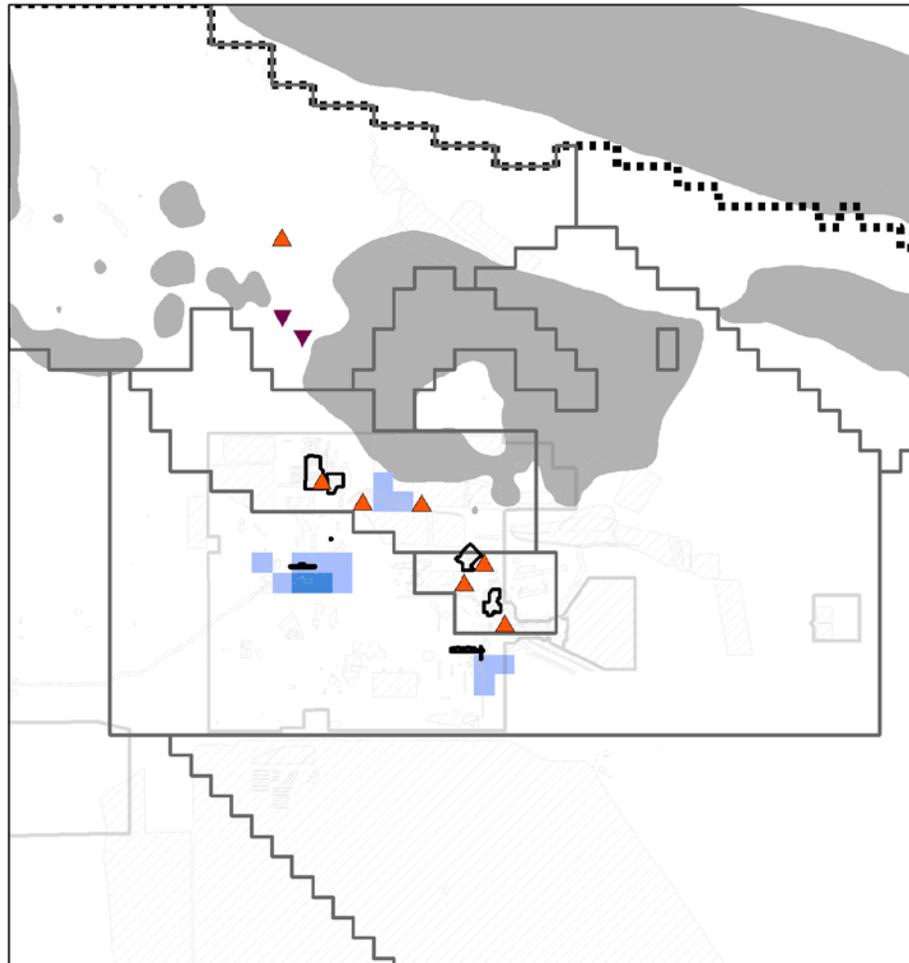
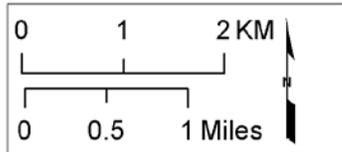
**20 Years
Uranium
Scenario 4**



P2R_FS_u238_20.png (DoubleFigure_FS.mxd)

Figure B-189 - Plan view contours of the uranium plume at simulation time 20 years based on the scenario 4 simulation.

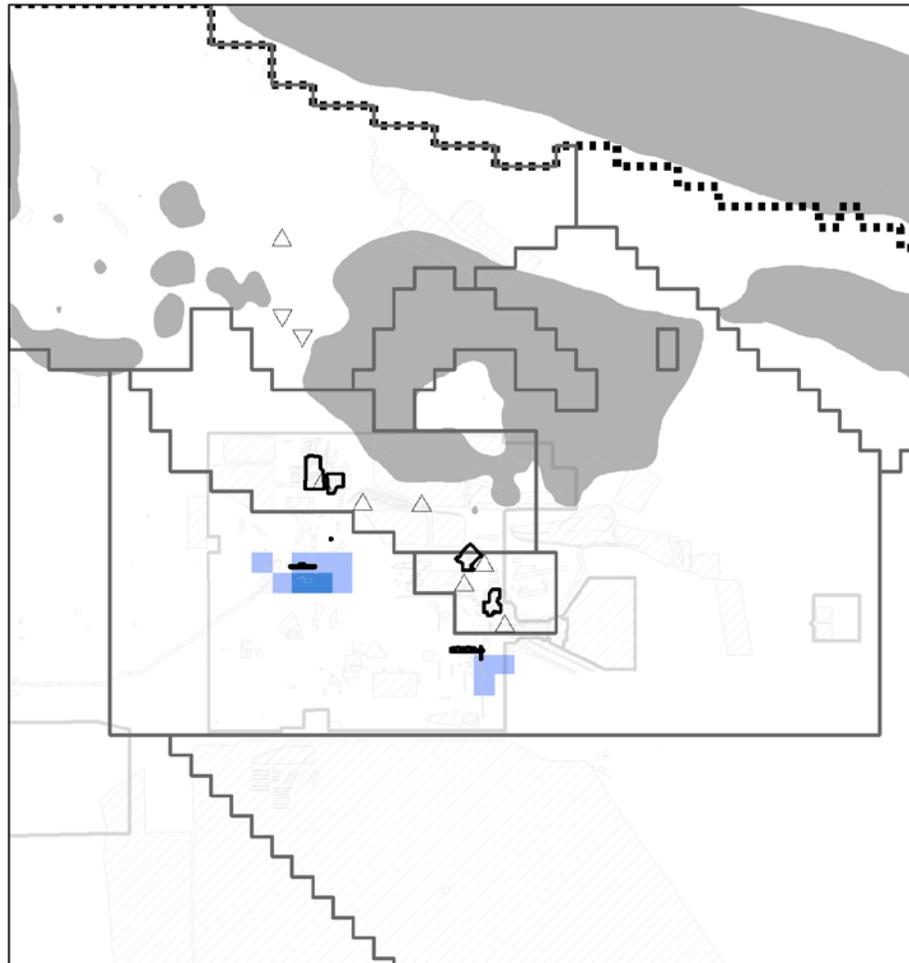
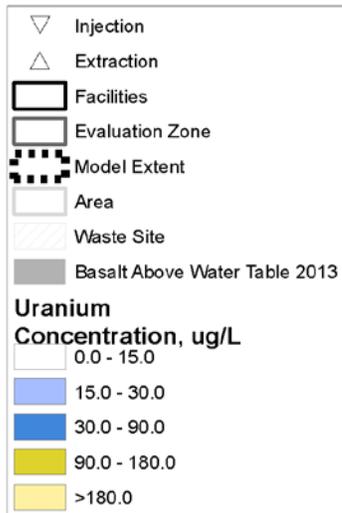
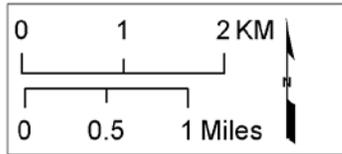
**25 Years
Uranium
Scenario 4**



P2R_FS_u238_25.png (DoubleFigure_FS.mxd)

Figure B-190 - Plan view contours of the uranium plume at simulation time 25 years based on the scenario 4 simulation.

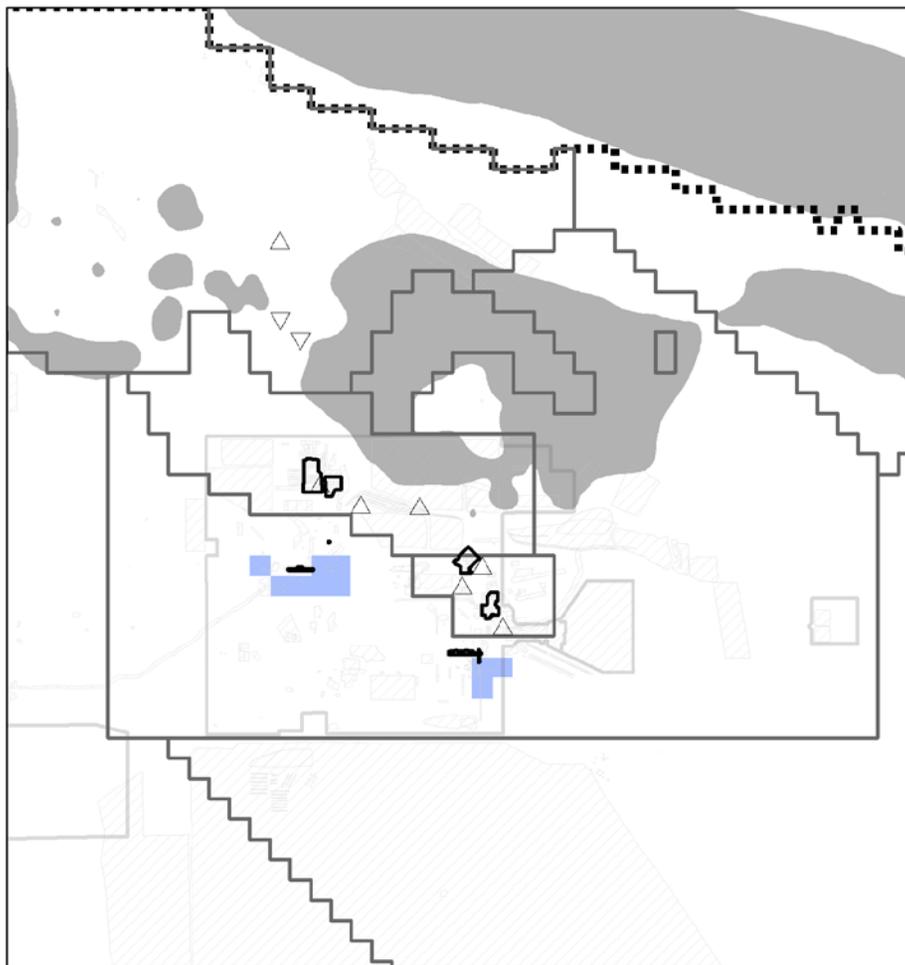
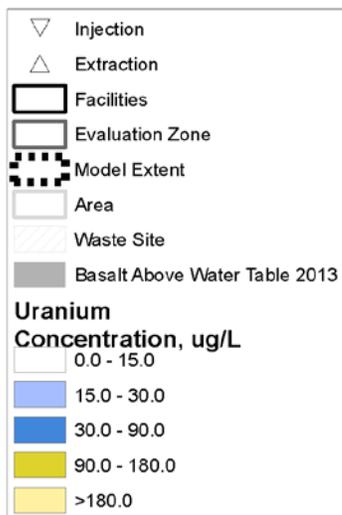
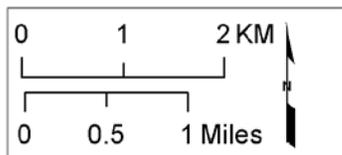
**30 Years
Uranium
Scenario 4**



P2R_FS_u238_30.png (DoubleFigure_FS.mxd)

Figure B-191 - Plan view contours of the uranium plume at simulation time 30 years based on the scenario 4 simulation.

**50 Years
Uranium
Scenario 4**



P2R_FS_u238_50.png (DoubleFigure_FS.mxd)

Figure B-192 - Plan view contours of the uranium plume at simulation time 50 years based on the scenario 4 simulation.

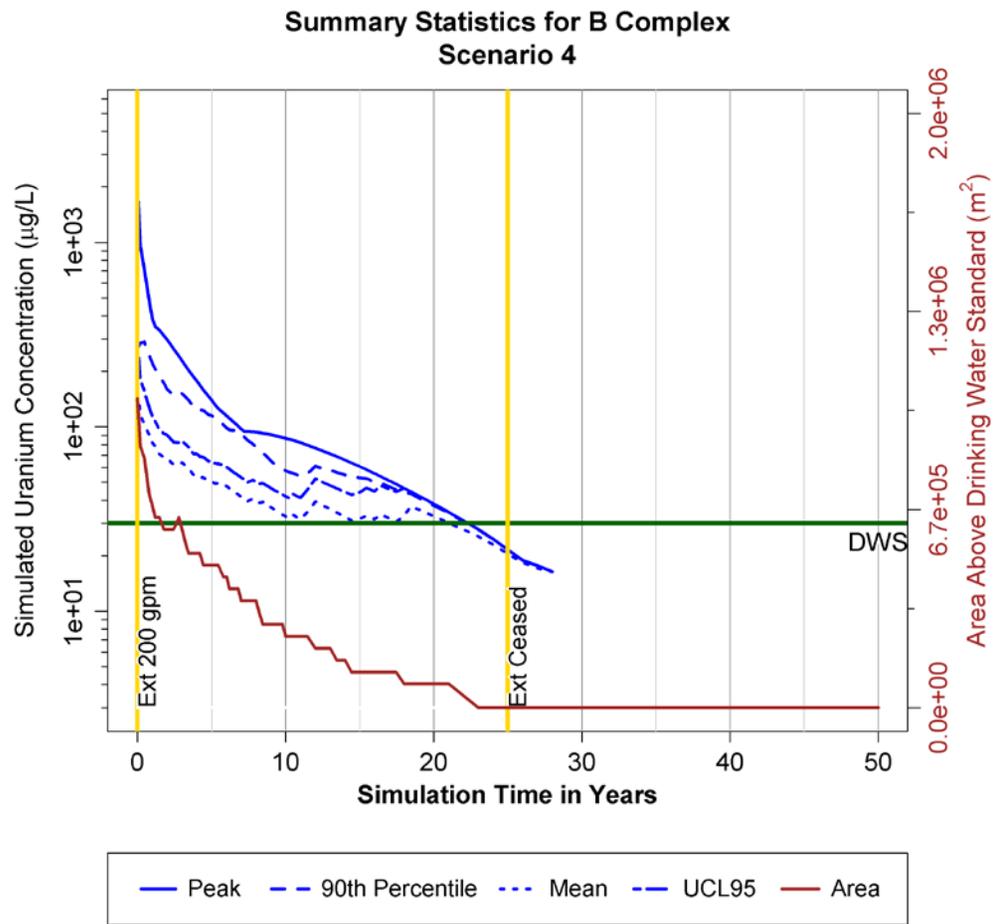


Figure B-193 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 4 simulation.

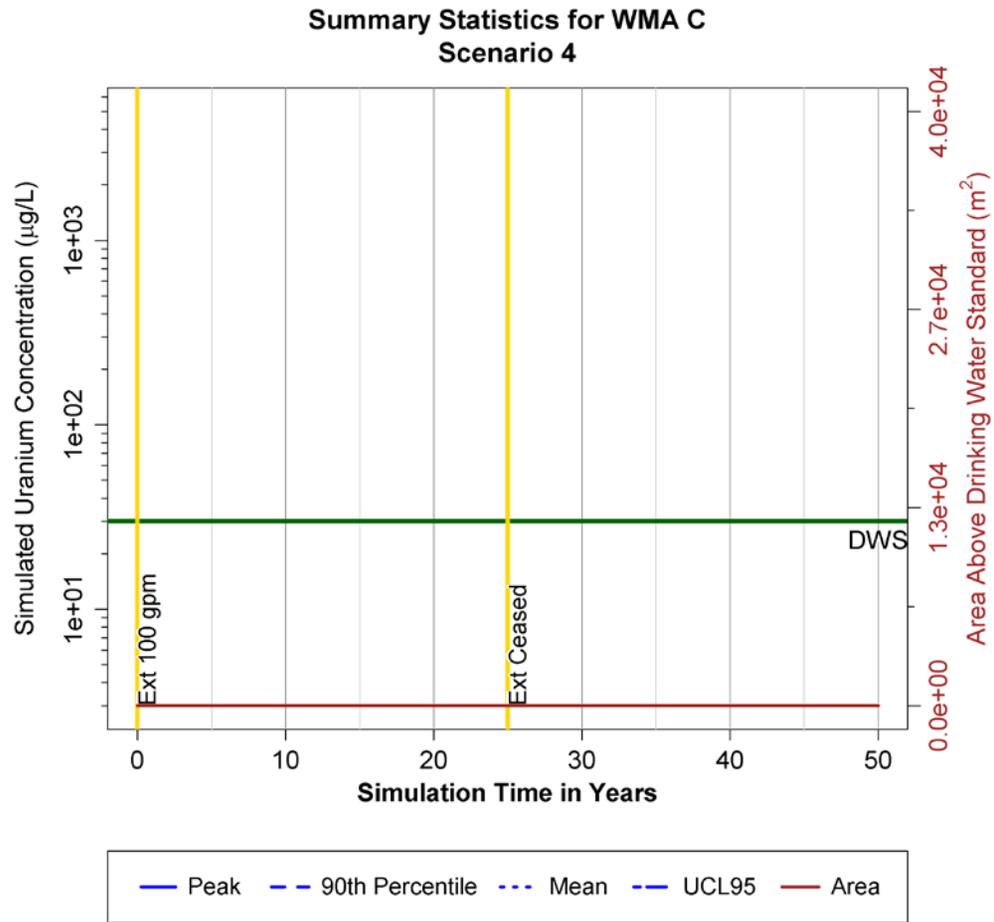


Figure B-194 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 4 simulation.

Summary Statistics for Greater 200 East
Scenario 4

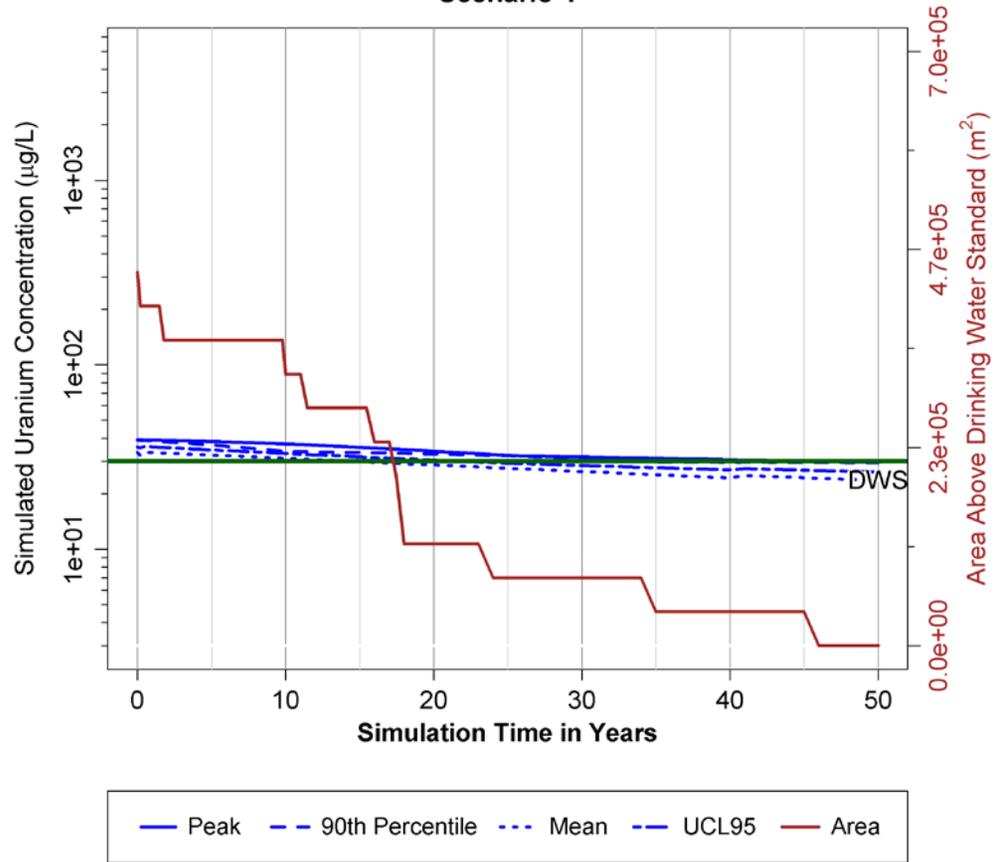


Figure B-195 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 4 simulation.

Summary Statistics for Gable Gap Area
Scenario 4

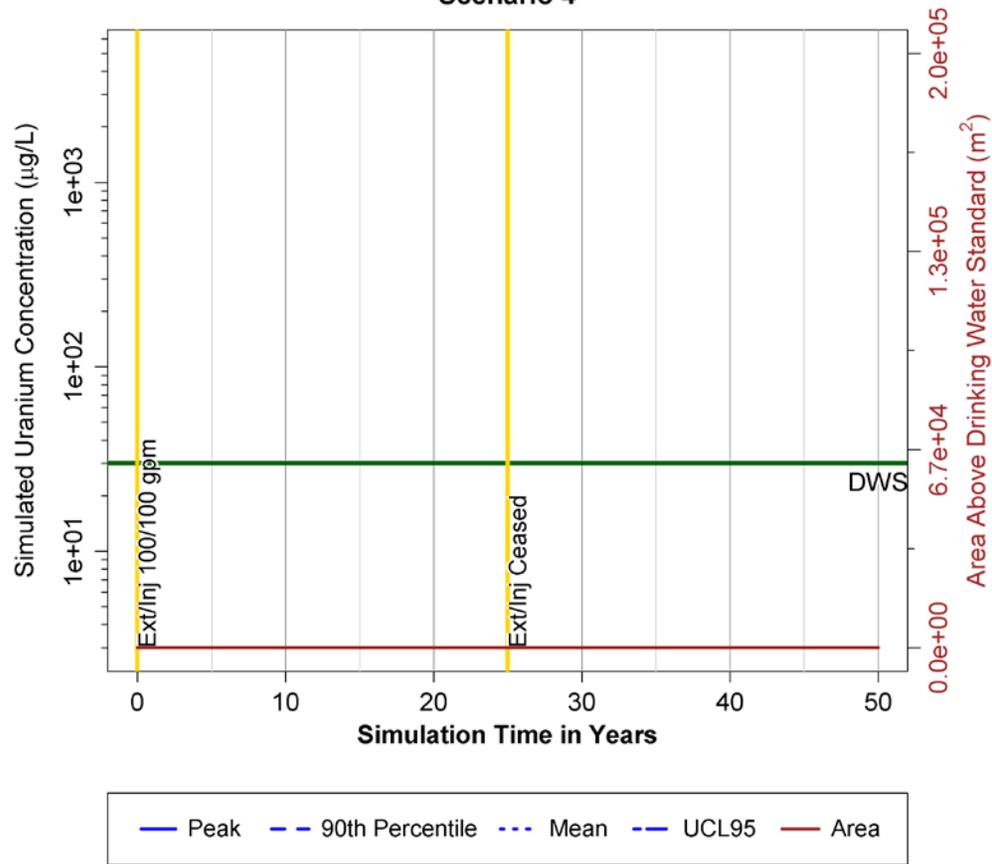
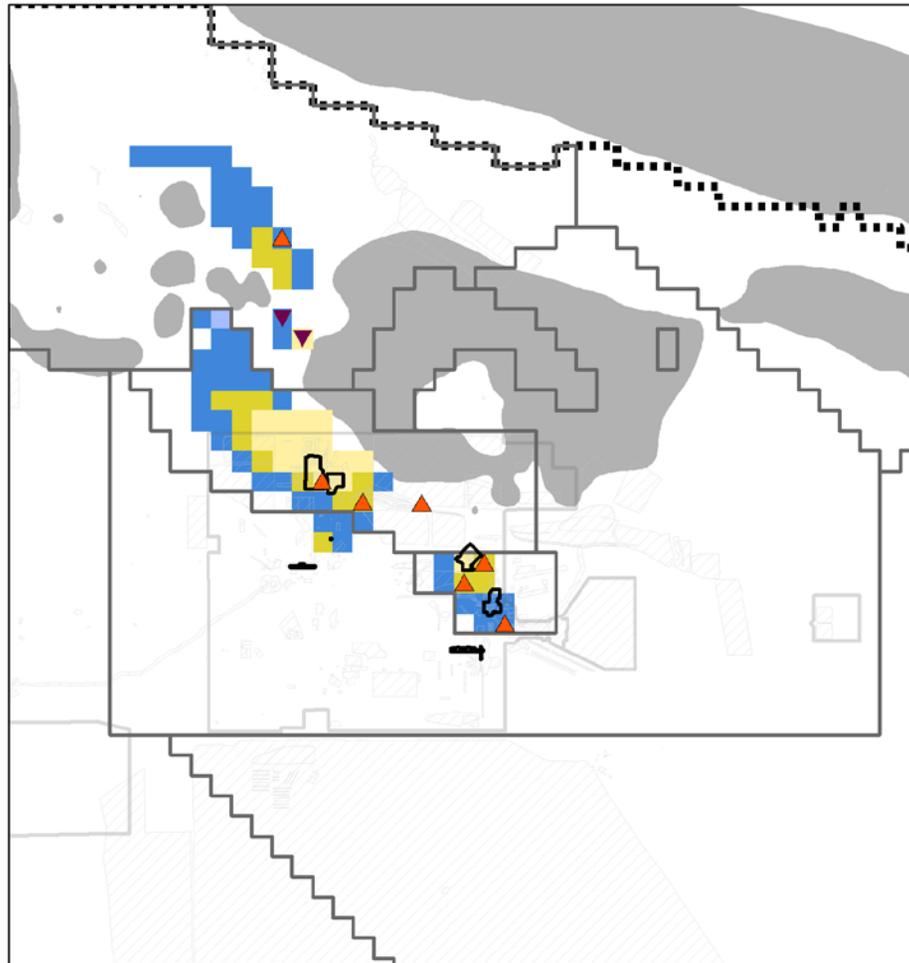
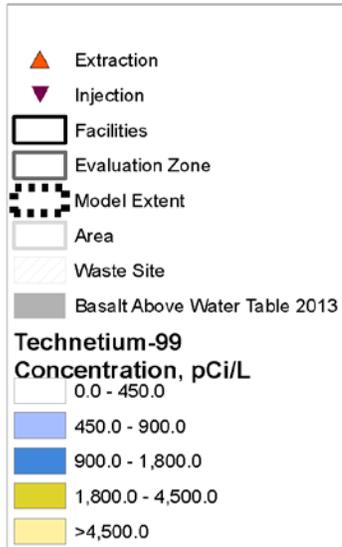
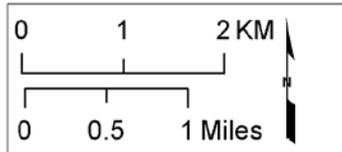


Figure B-196 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 4 simulation.

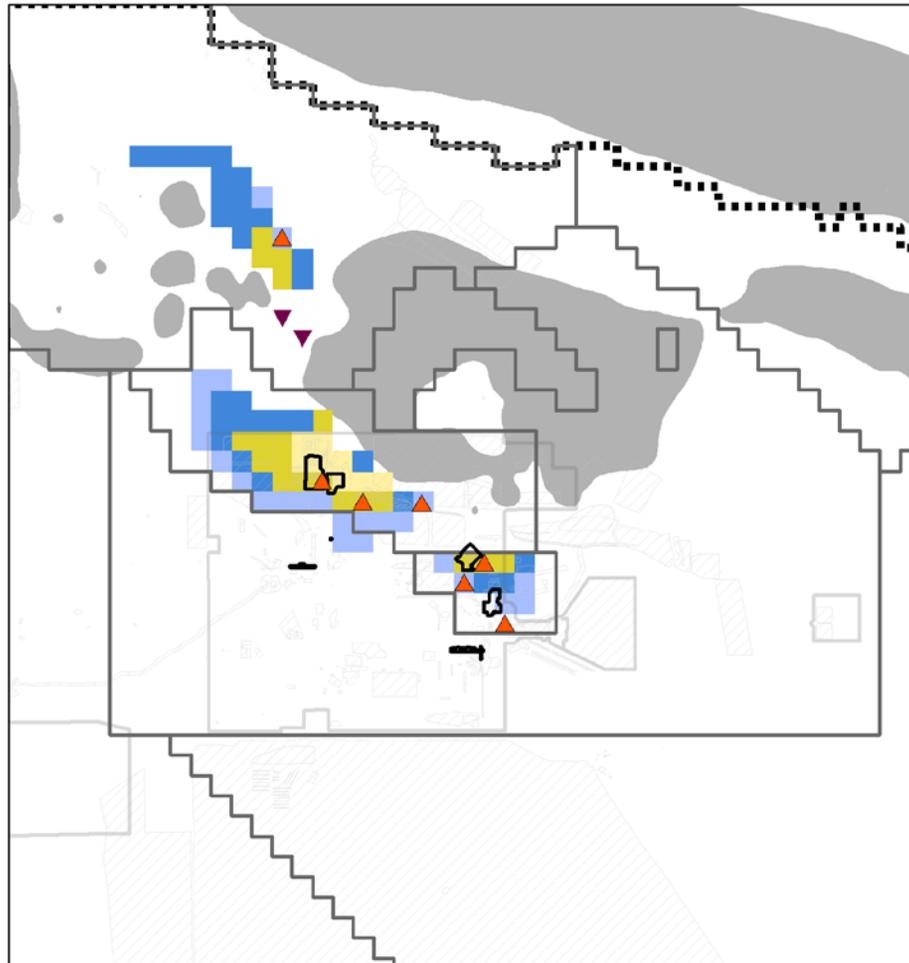
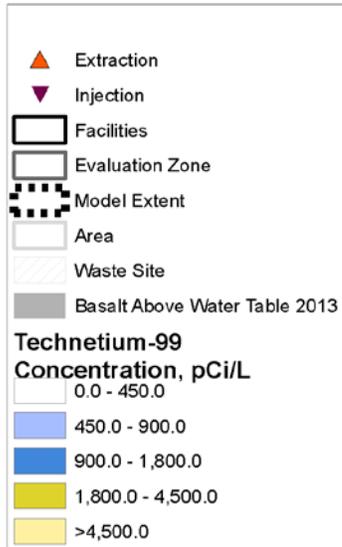
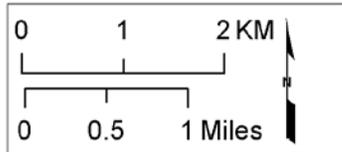
**0 Years
Technetium-99
Scenario 4
Continuing Source**



P2R_FS_tc99_0.png (DoubleFigure_FS.mxd)

Figure B-197 - Plan view contours of the technetium-99 plume at simulation time 0 years based on the scenario 4 simulation with a continuing source term.

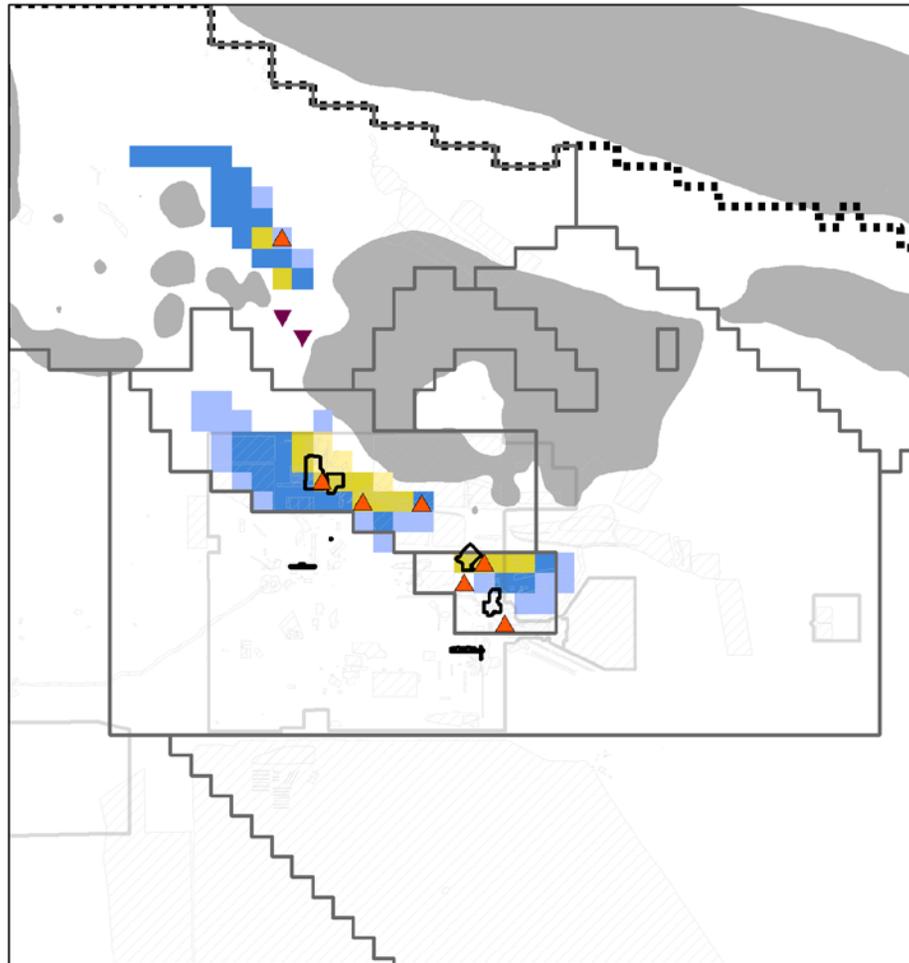
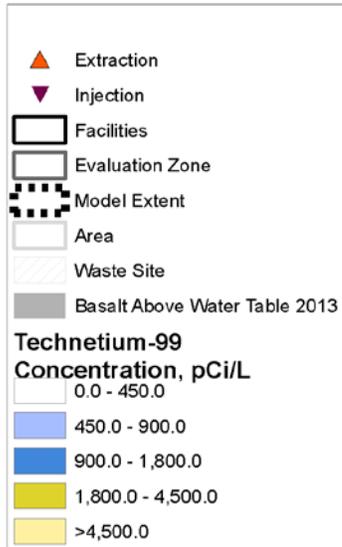
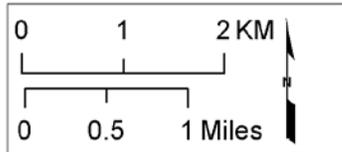
**1 Years
Technetium-99
Scenario 4
Continuing Source**



P2R_FS_tc99_1.png (DoubleFigure_FS.mxd)

Figure B-198 - Plan view contours of the technetium-99 plume at simulation time 1 years based on the scenario 4 simulation with a continuing source term.

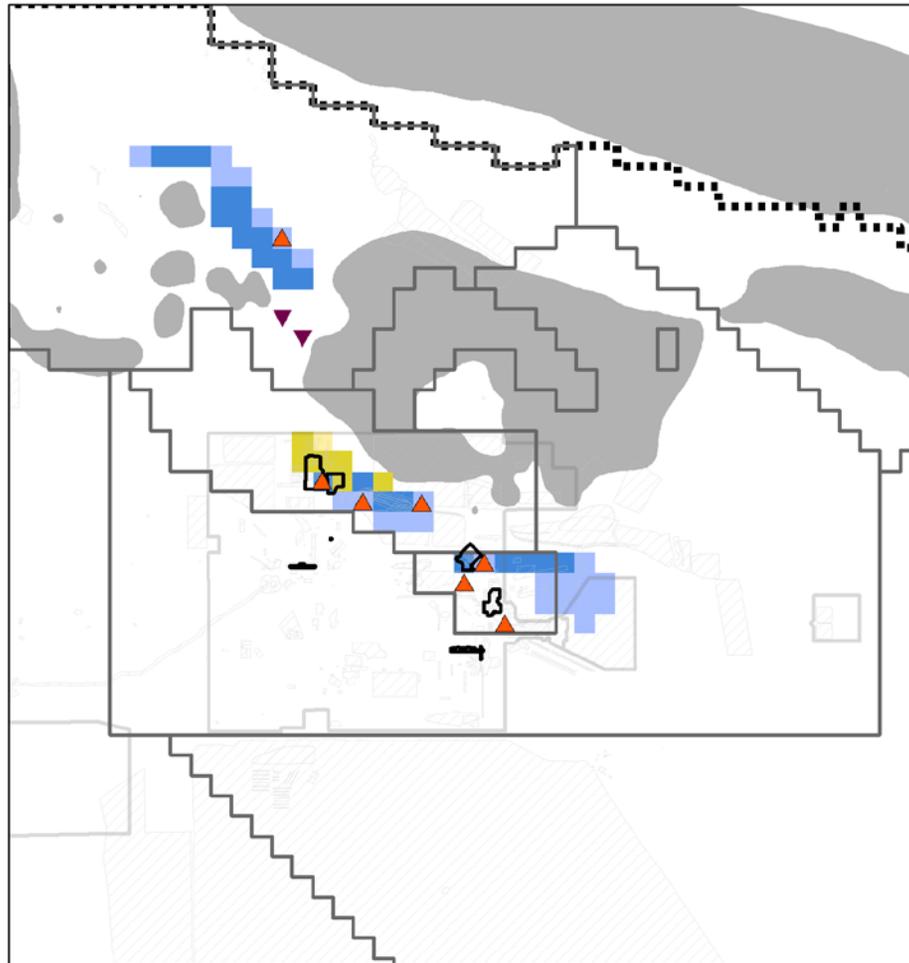
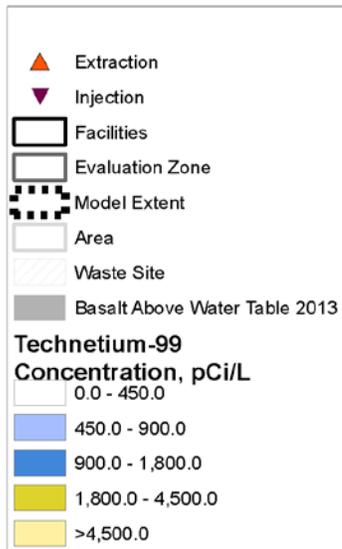
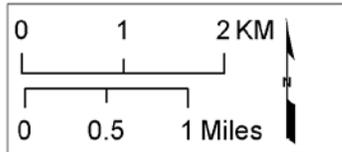
**2 Years
Technetium-99
Scenario 4
Continuing Source**



P2R_FS_tc99_2.png (DoubleFigure_FS.mxd)

Figure B-199 - Plan view contours of the technetium-99 plume at simulation time 2 years based on the scenario 4 simulation with a continuing source term.

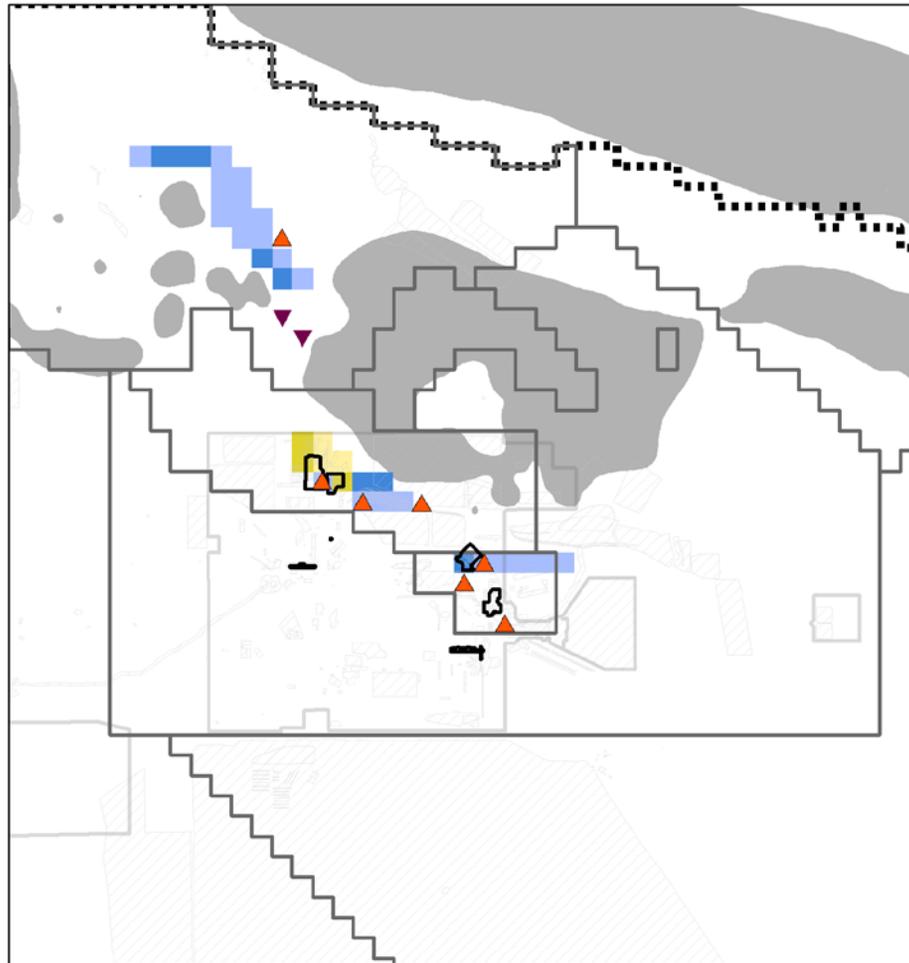
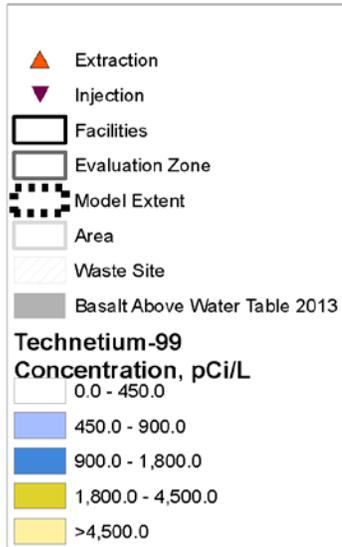
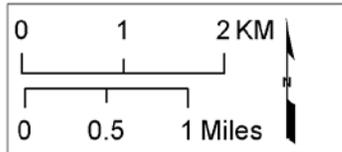
**5 Years
Technetium-99
Scenario 4
Continuing Source**



P2R_FS_tc99_5.png (DoubleFigure_FS.mxd)

Figure B-200 - Plan view contours of the technetium-99 plume at simulation time 5 years based on the scenario 4 simulation with a continuing source term.

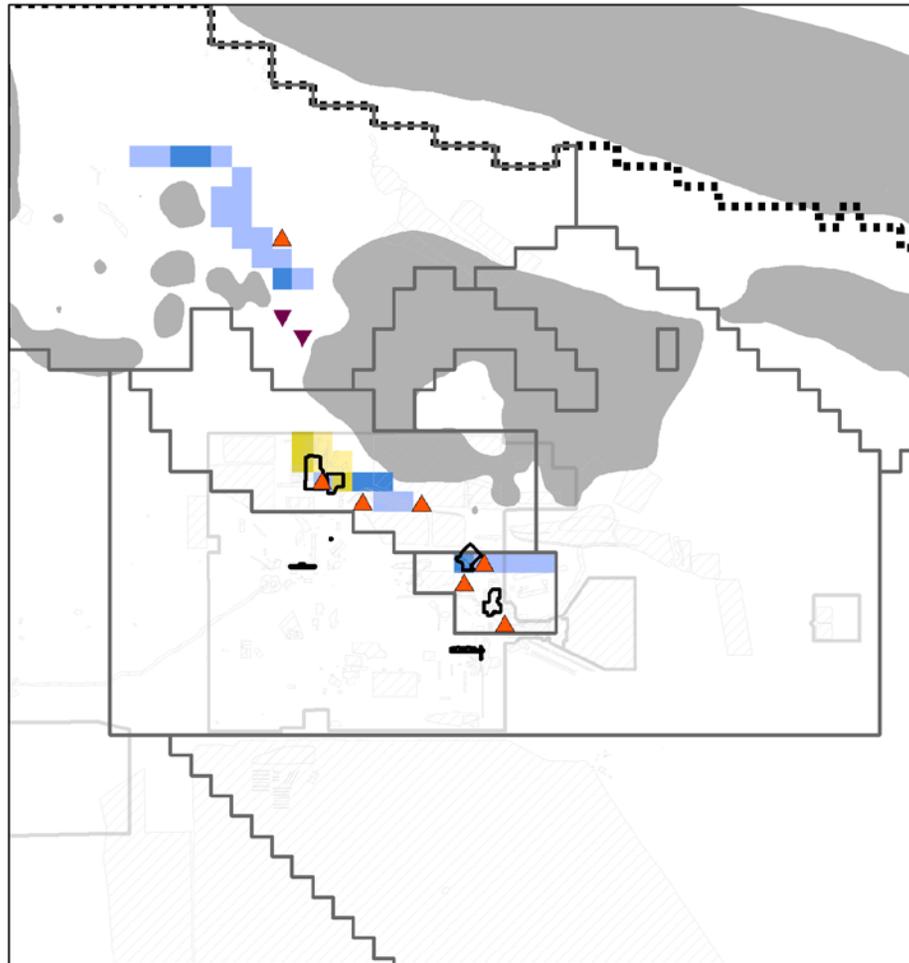
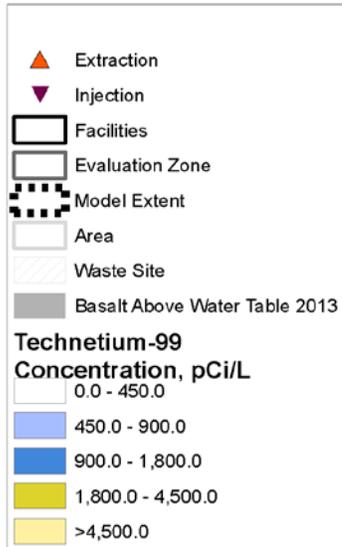
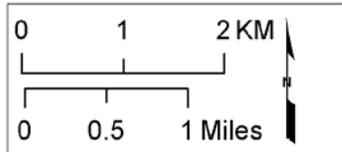
**10 Years
Technetium-99
Scenario 4
Continuing Source**



P2R_FS_tc99_10.png (DoubleFigure_FS.mxd)

Figure B-201 - Plan view contours of the technetium-99 plume at simulation time 10 years based on the scenario 4 simulation with a continuing source term.

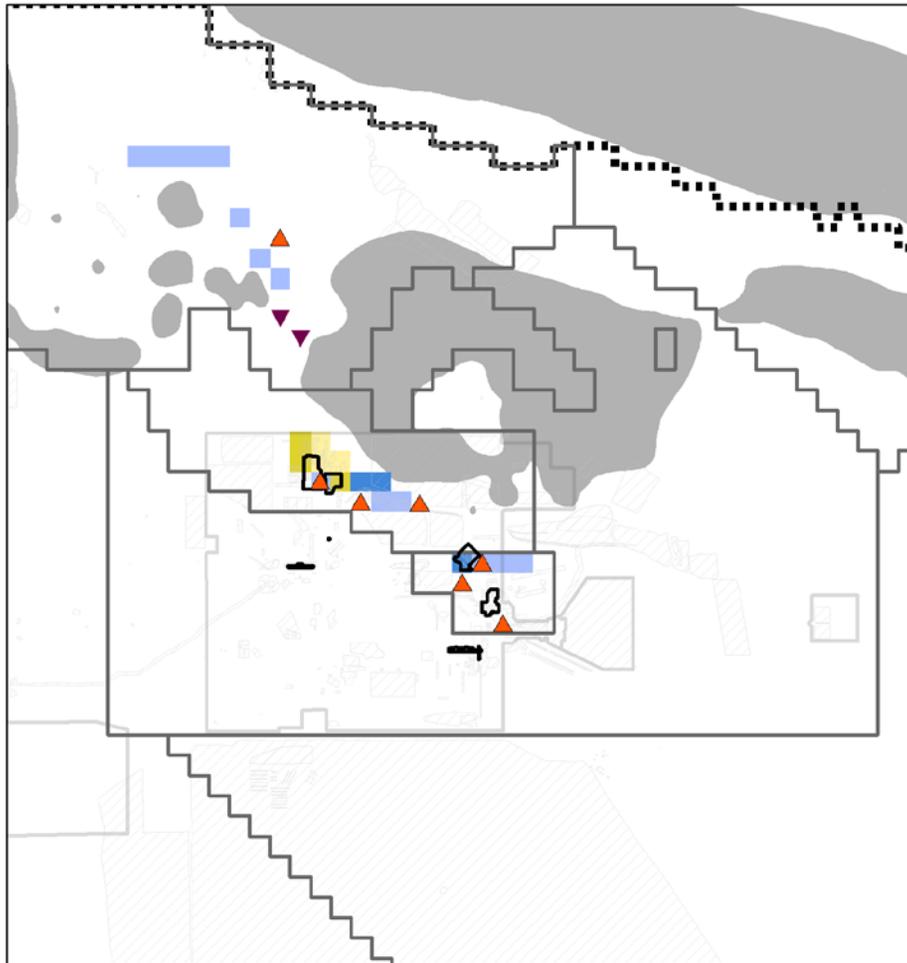
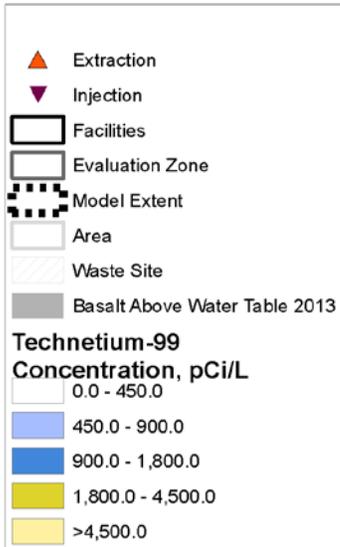
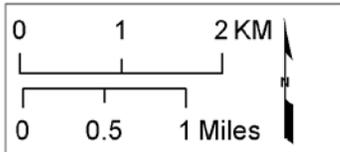
**15 Years
Technetium-99
Scenario 4
Continuing Source**



P2R_FS_tc99_15.png (DoubleFigure_FS.mxd)

Figure B-202 - Plan view contours of the technetium-99 plume at simulation time 15 years based on the scenario 4 simulation with a continuing source term.

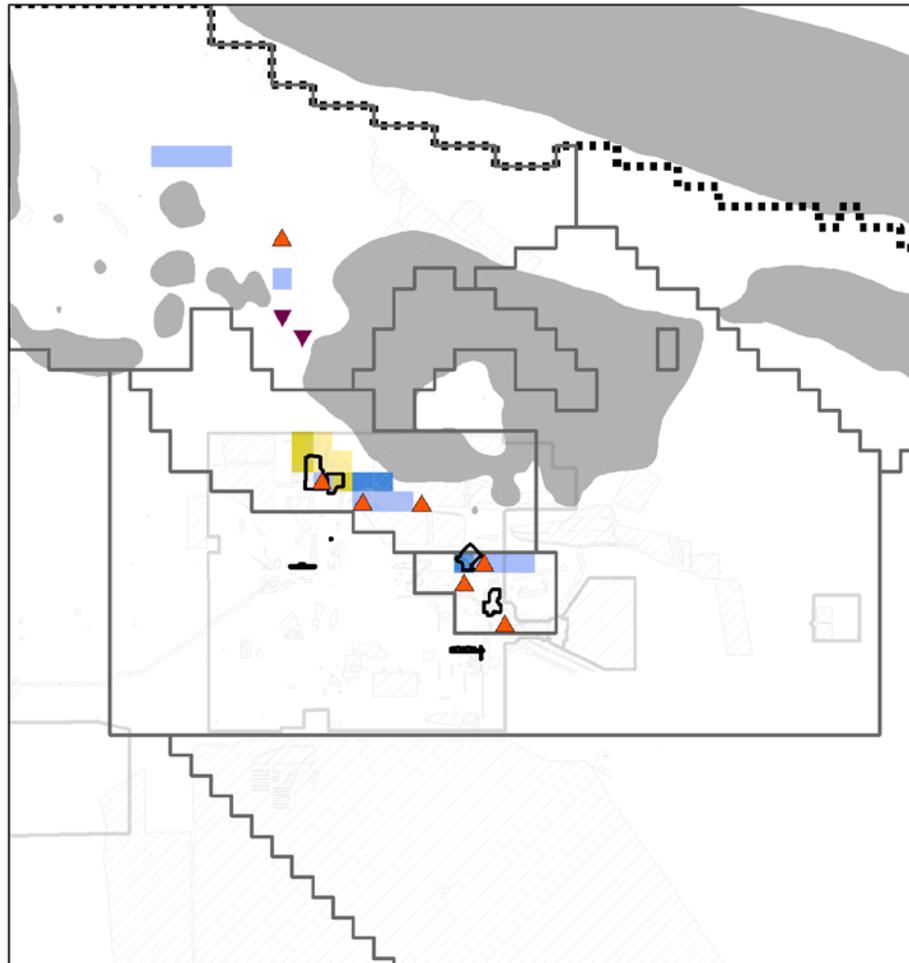
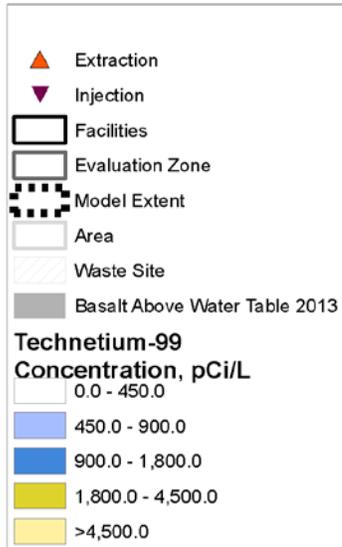
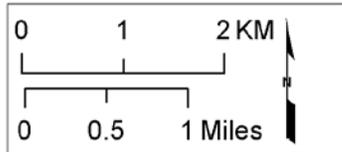
**20 Years
Technetium-99
Scenario 4
Continuing Source**



P2R_FS_tc99_20.png (DoubleFigure_FS.mxd)

Figure B-203 - Plan view contours of the technetium-99 plume at simulation time 20 years based on the scenario 4 simulation with a continuing source term.

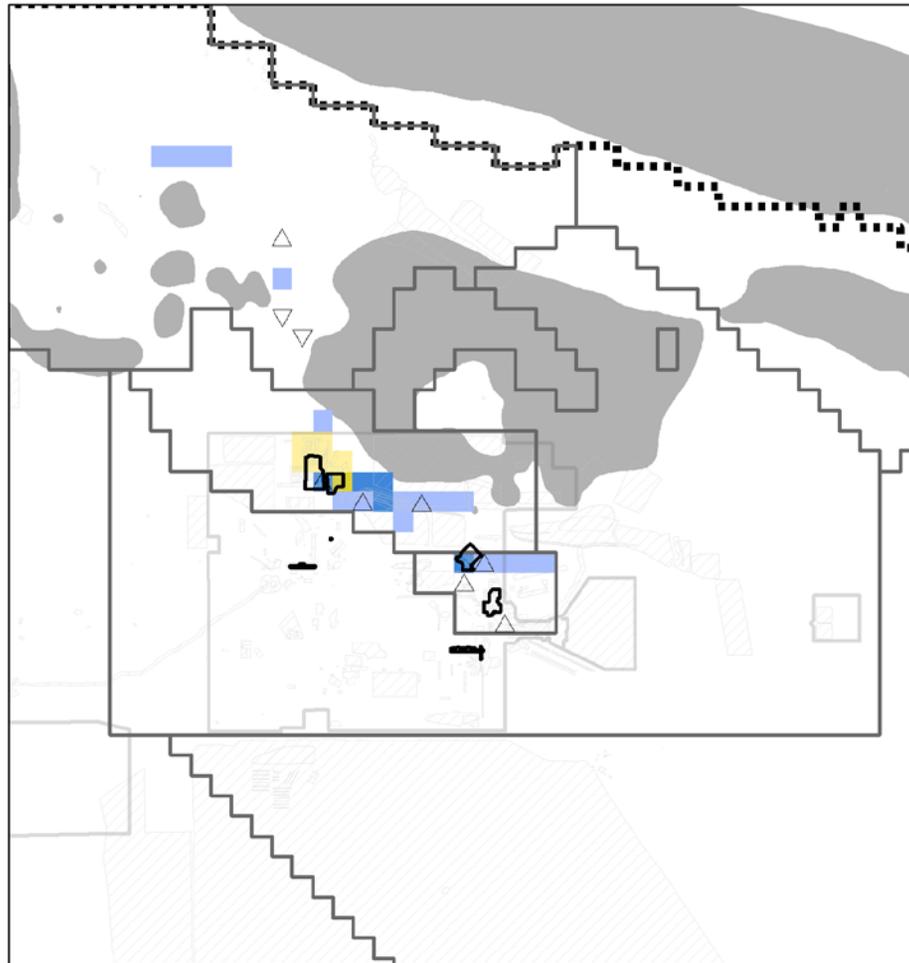
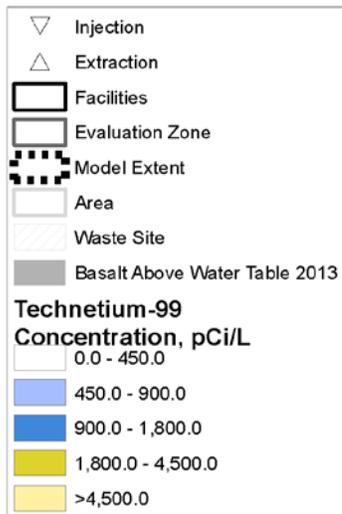
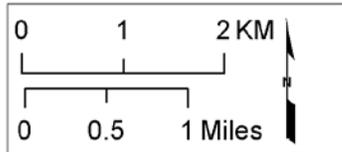
**25 Years
Technetium-99
Scenario 4
Continuing Source**



P2R_FS_tc99_25.png (DoubleFigure_FS.mxd)

Figure B-204 - Plan view contours of the technetium-99 plume at simulation time 25 years based on the scenario 4 simulation with a continuing source term.

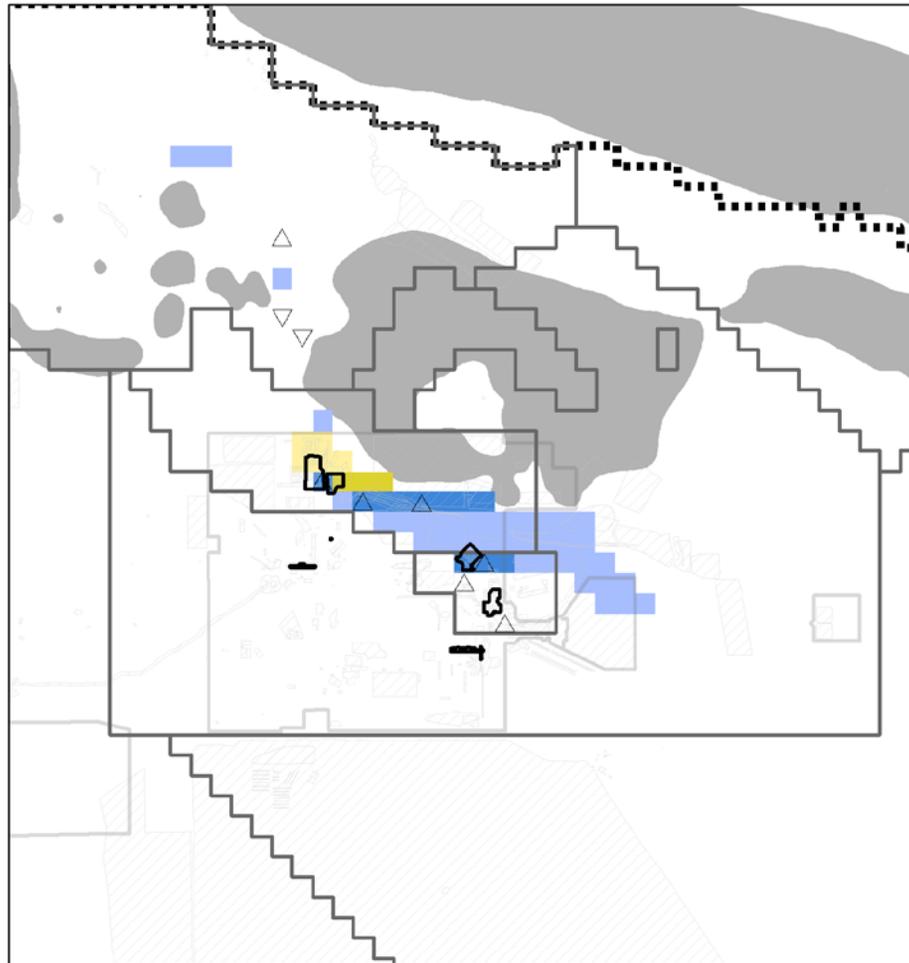
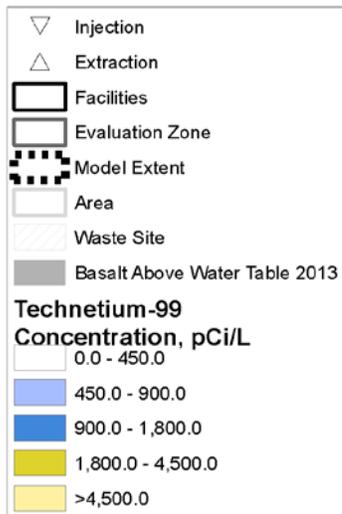
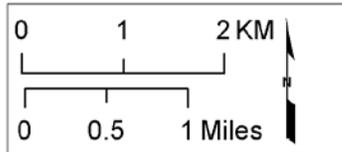
**30 Years
Technetium-99
Scenario 4
Continuing Source**



P2R_FS_tc99_30.png (DoubleFigure_FS.mxd)

Figure B-205 - Plan view contours of the technetium-99 plume at simulation time 30 years based on the scenario 4 simulation with a continuing source term.

**50 Years
Technetium-99
Scenario 4
Continuing Source**



P2R_FS_tc99_50.png (DoubleFigure_FS.mxd)

Figure B-206 - Plan view contours of the technetium-99 plume at simulation time 50 years based on the scenario 4 simulation with a continuing source term.

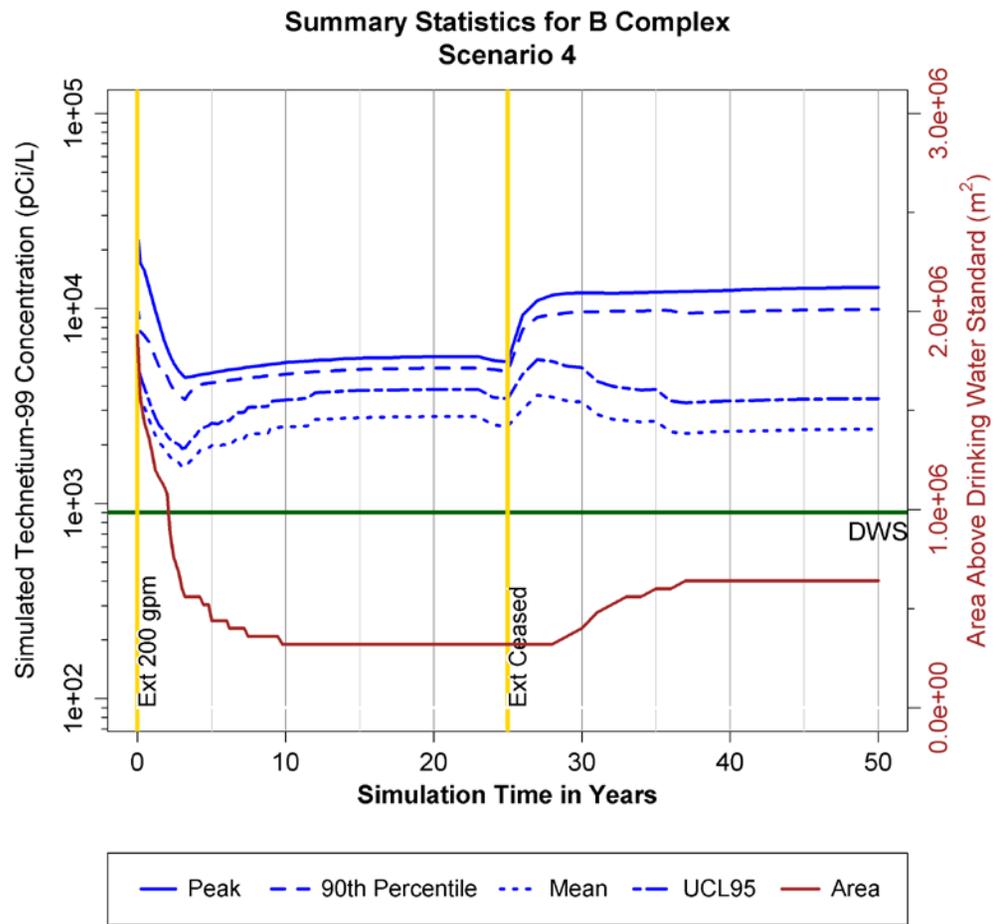


Figure B-207 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 4 simulation with a continuing source term.

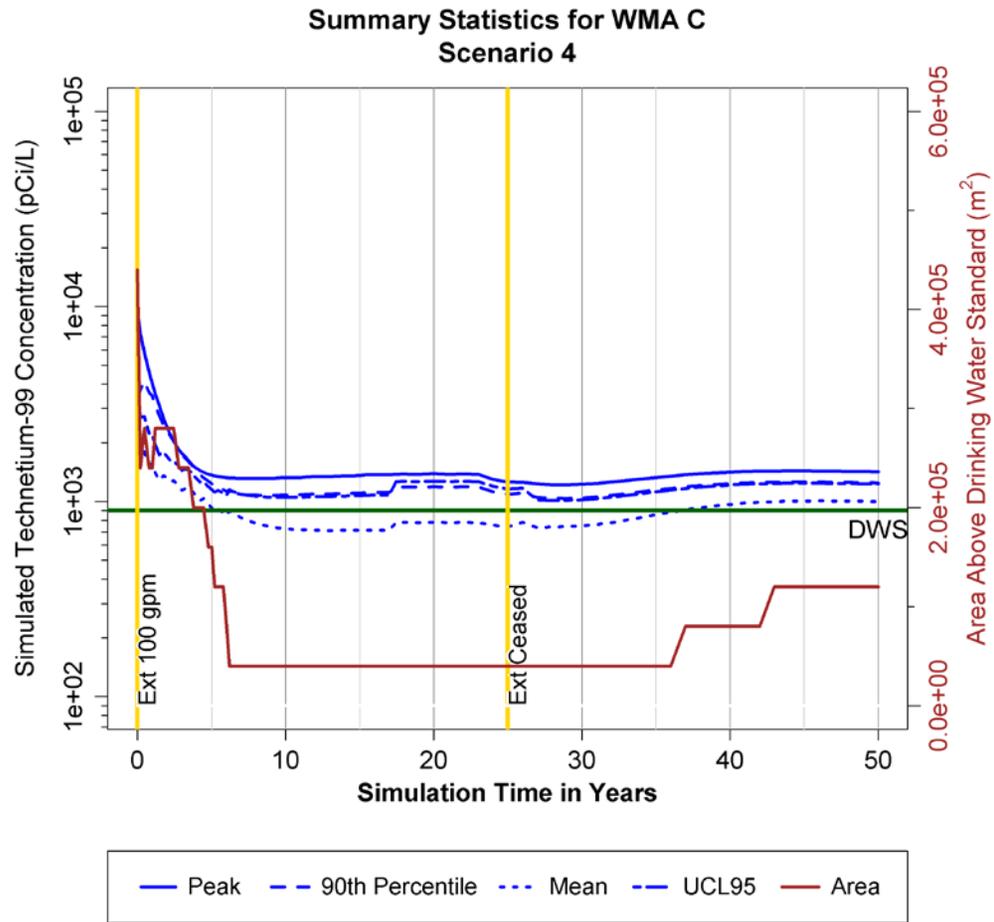


Figure B-208 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 4 simulation with a continuing source term.

Summary Statistics for Greater 200 East
Scenario 4

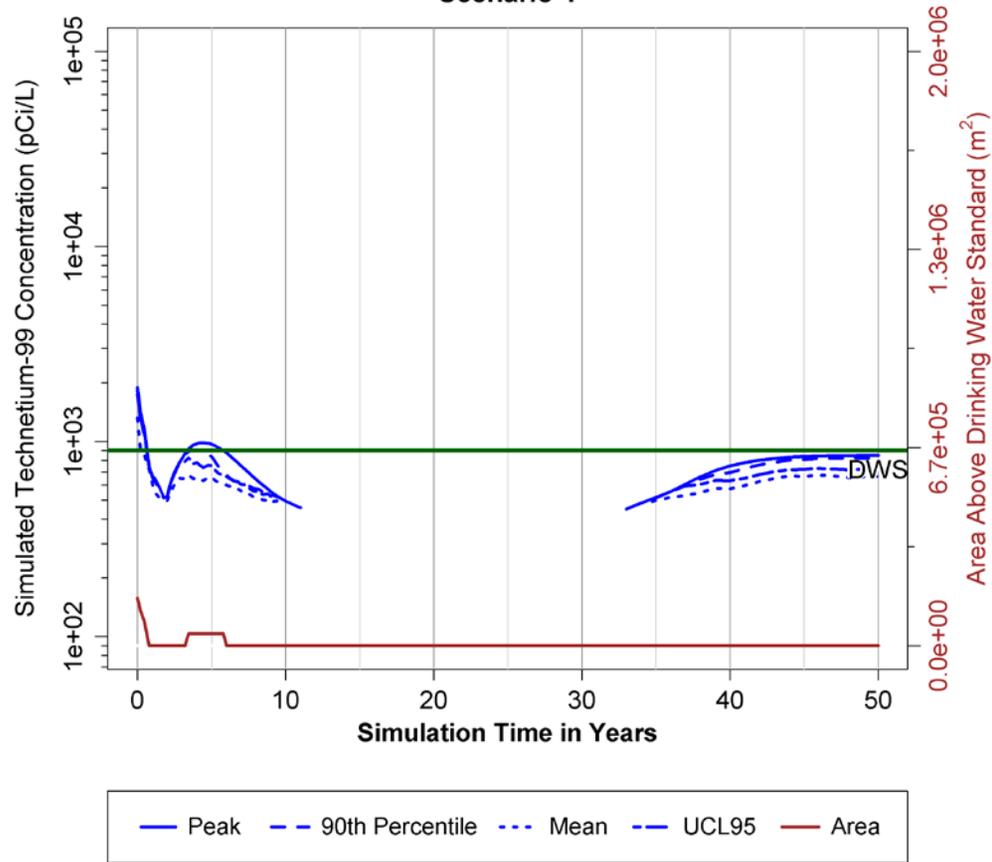


Figure B-209 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 4 simulation with a continuing source term.

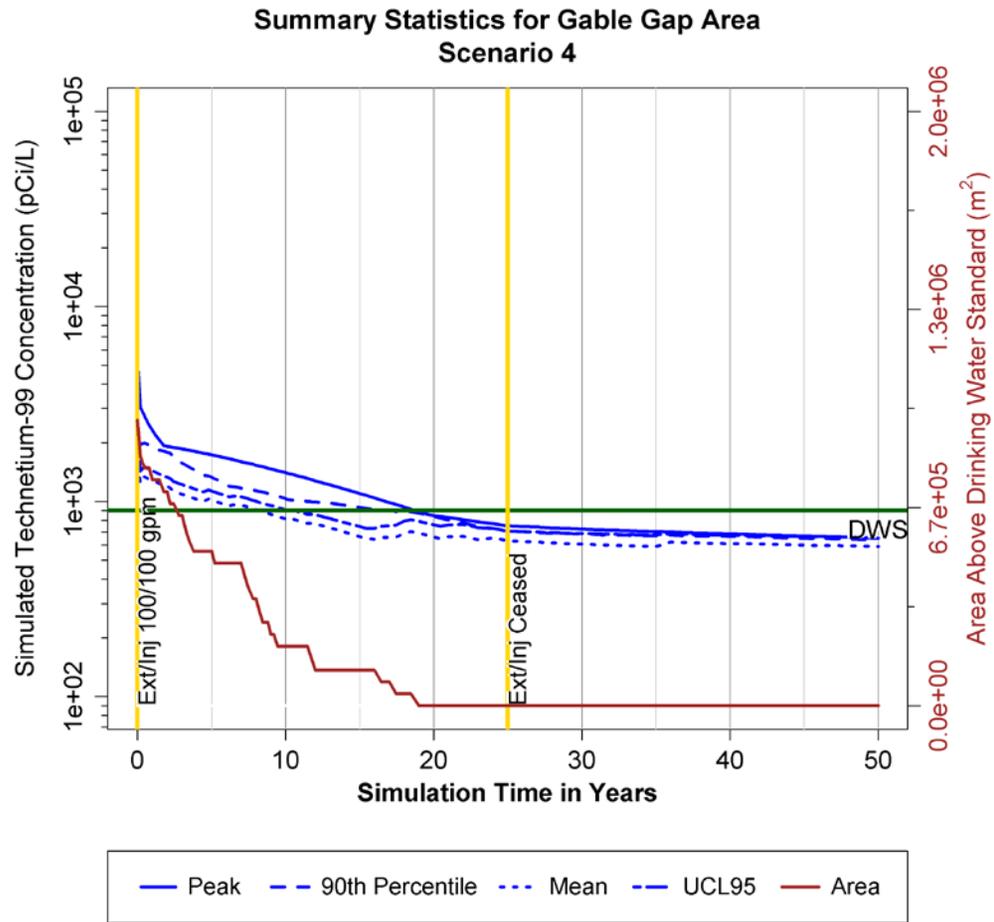
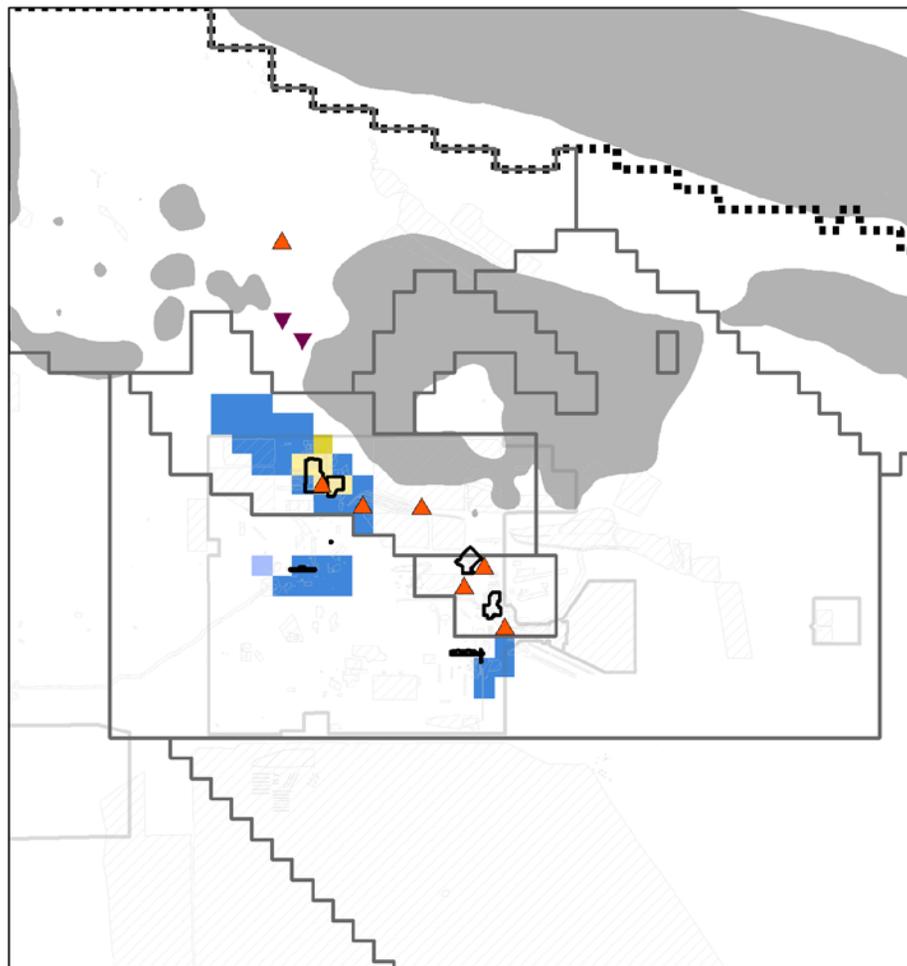
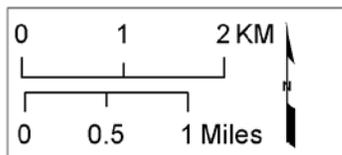


Figure B-210 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 4 simulation with a continuing source term.

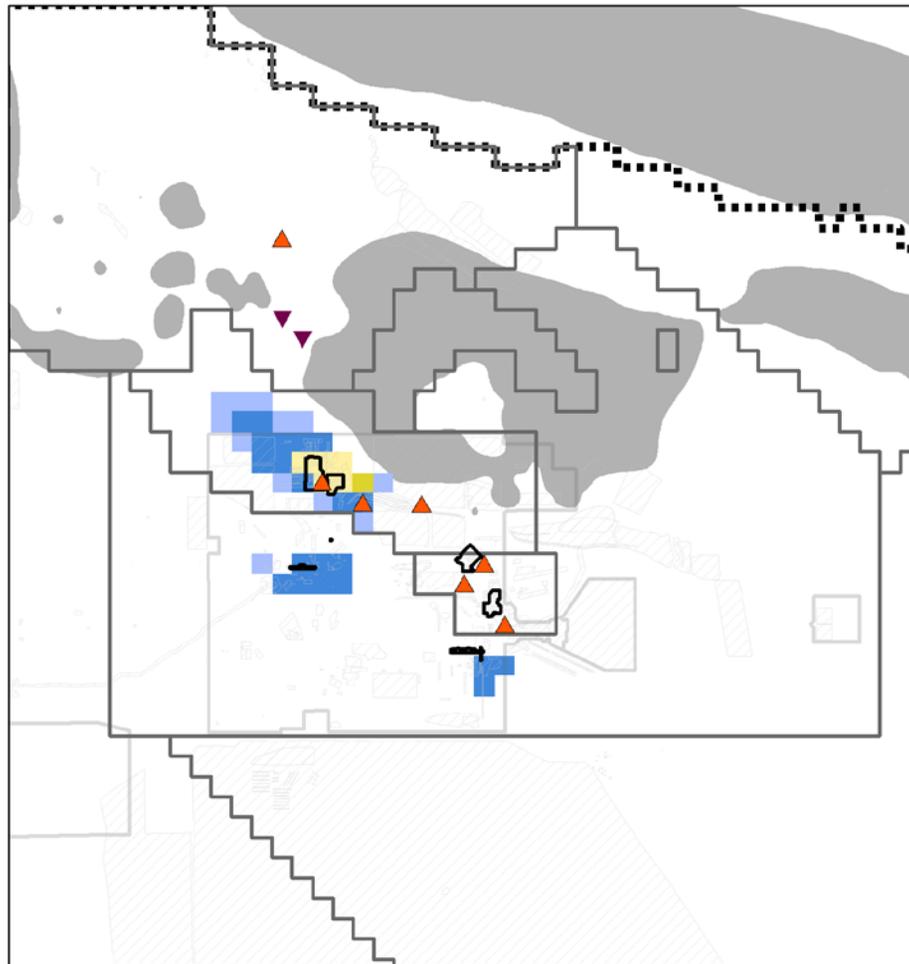
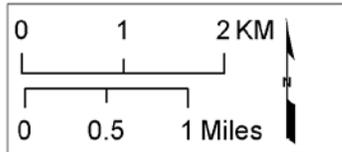
**0 Years
Uranium
Scenario 4
Continuing Source**



P2R_FS_u238_0.png (DoubleFigure_FS.mxd)

Figure B-211 - Plan view contours of the uranium plume at simulation time 0 years based on the scenario 4 simulation with a continuing source term.

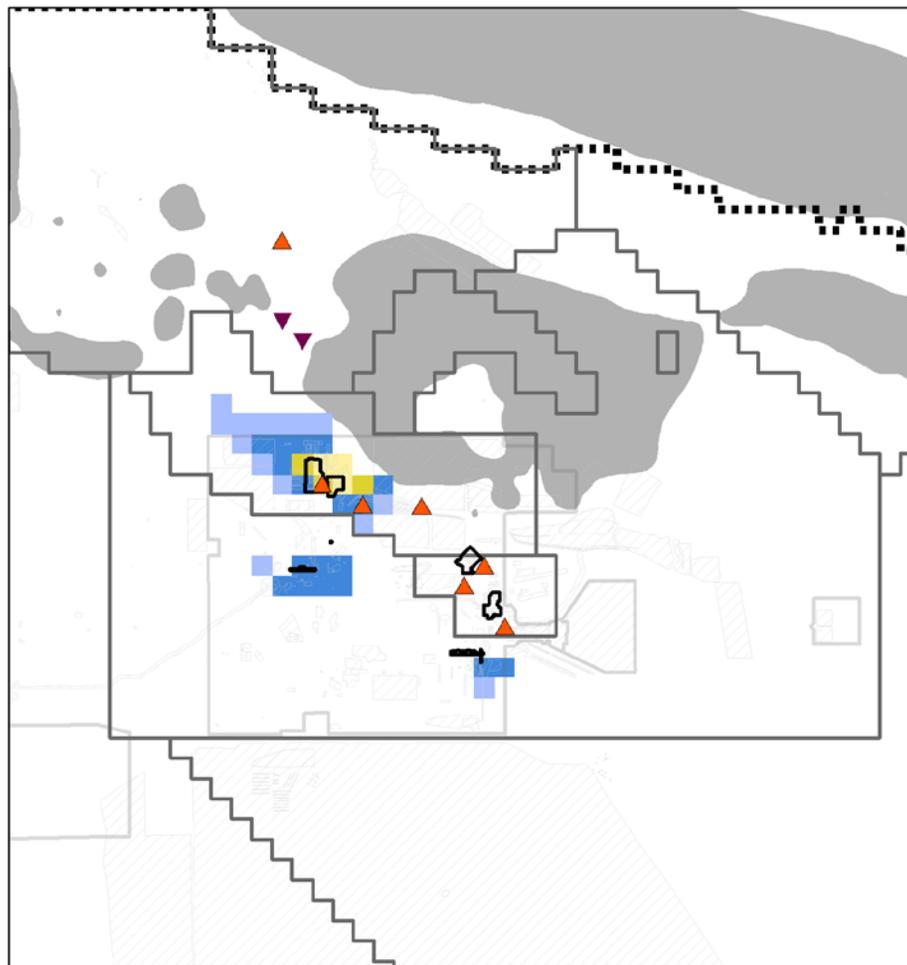
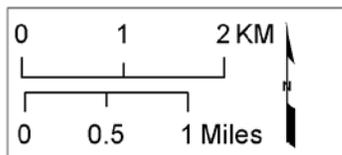
**1 Years
Uranium
Scenario 4
Continuing Source**



P2R_FS_u238_1.png (DoubleFigure_FS.mxd)

Figure B-212 - Plan view contours of the uranium plume at simulation time 1 years based on the scenario 4 simulation with a continuing source term.

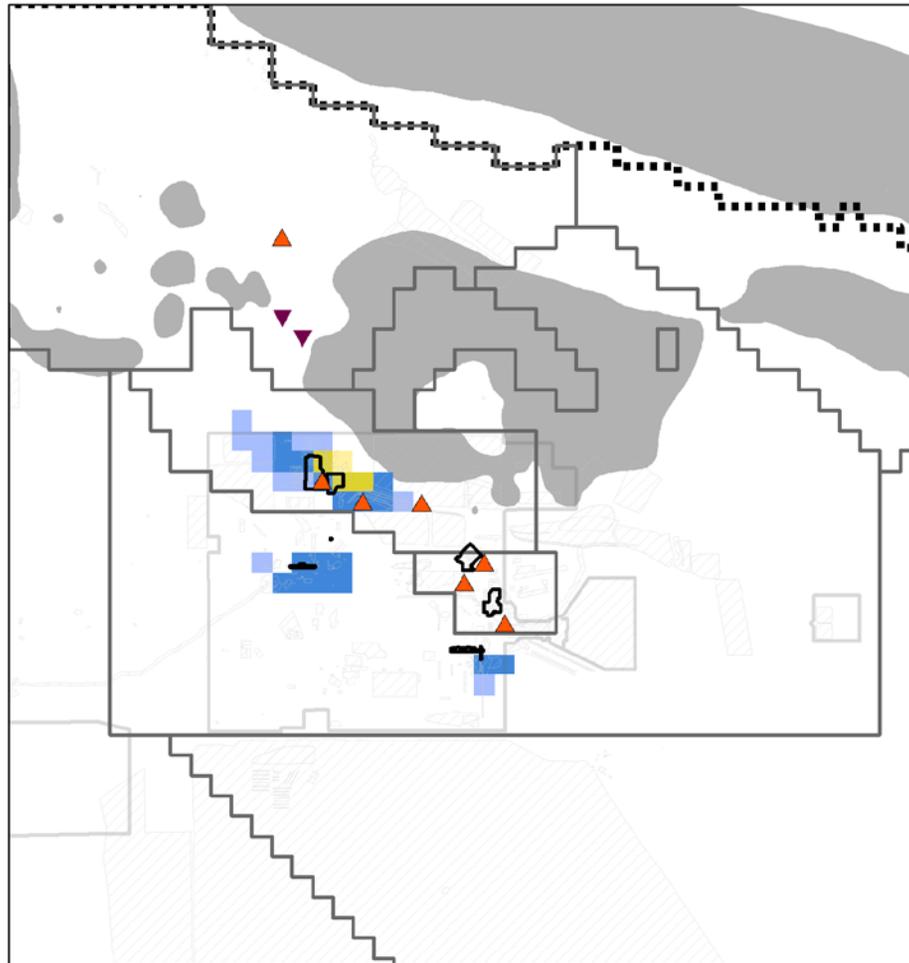
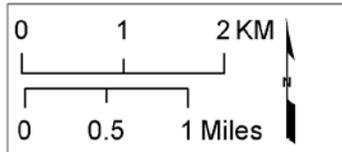
**2 Years
Uranium
Scenario 4
Continuing Source**



P2R_FS_u238_2.png (DoubleFigure_FS.mxd)

Figure B-213 - Plan view contours of the uranium plume at simulation time 2 years based on the scenario 4 simulation with a continuing source term.

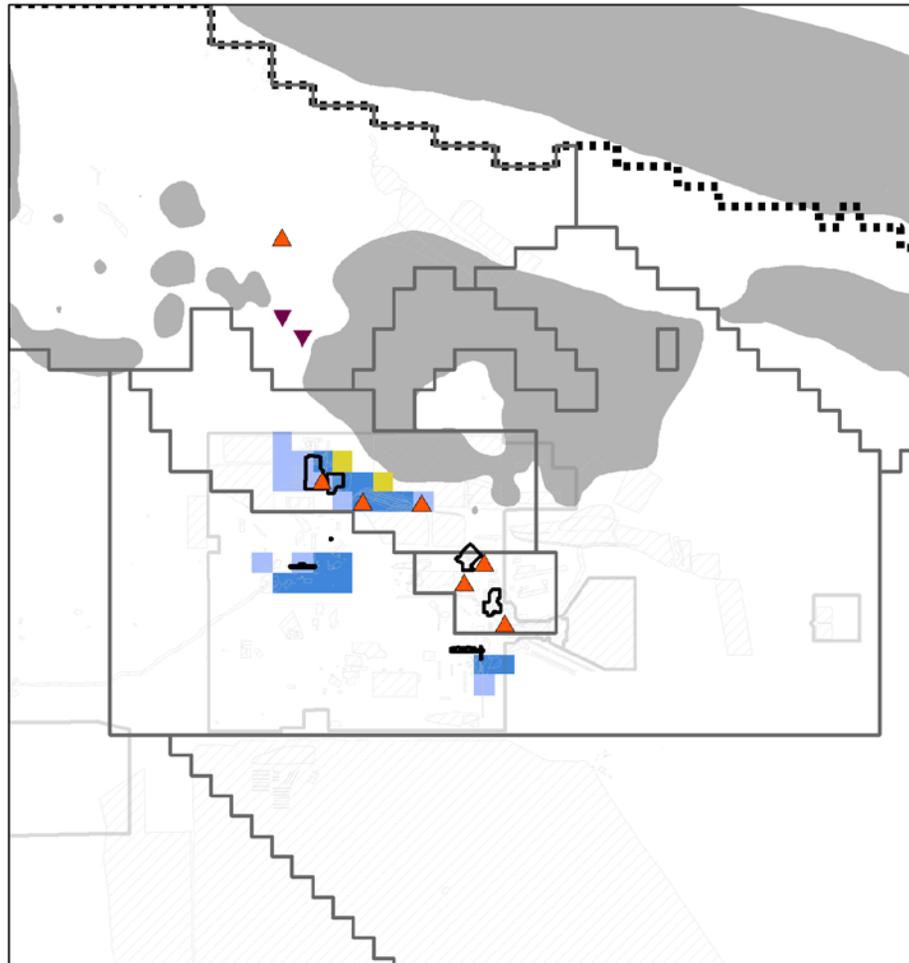
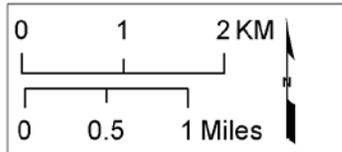
**5 Years
Uranium
Scenario 4
Continuing Source**



P2R_FS_u238_5.png (DoubleFigure_FS.mxd)

Figure B-214 - Plan view contours of the uranium plume at simulation time 5 years based on the scenario 4 simulation with a continuing source term.

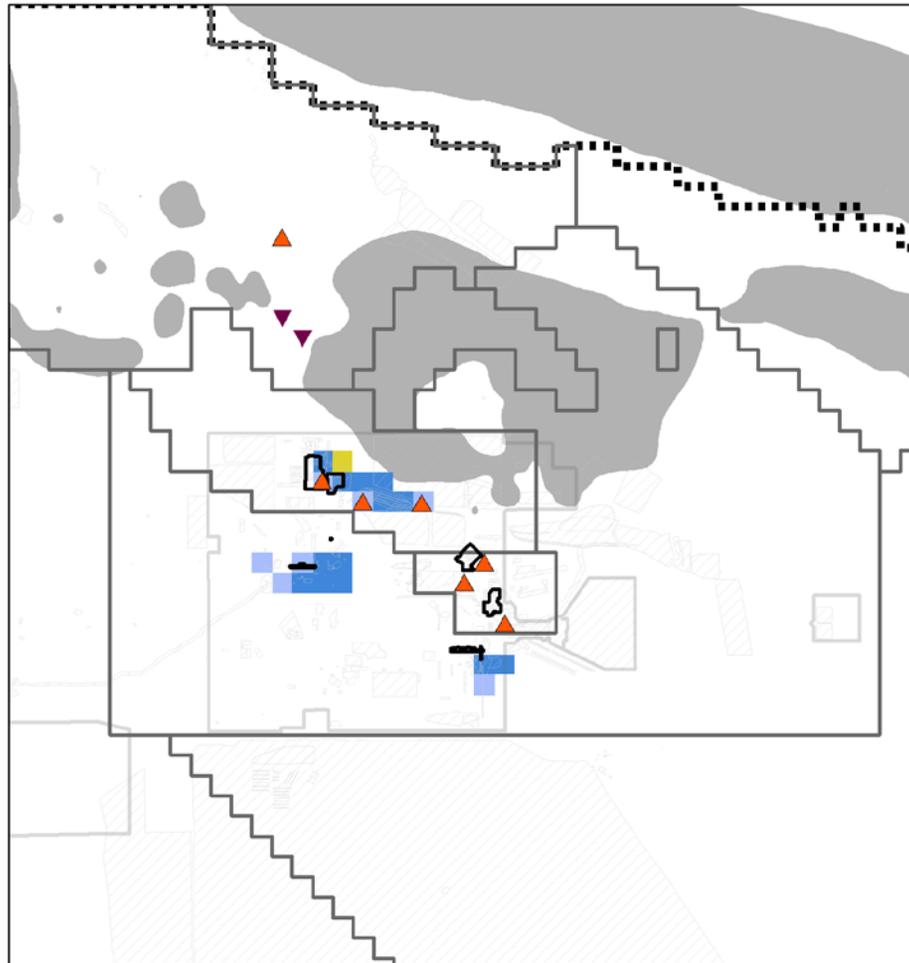
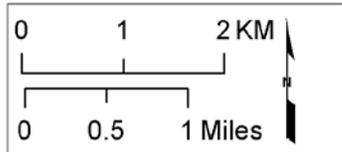
**10 Years
Uranium
Scenario 4
Continuing Source**



P2R_FS_u238_10.png (DoubleFigure_FS.mxd)

Figure B-215 - Plan view contours of the uranium plume at simulation time 10 years based on the scenario 4 simulation with a continuing source term.

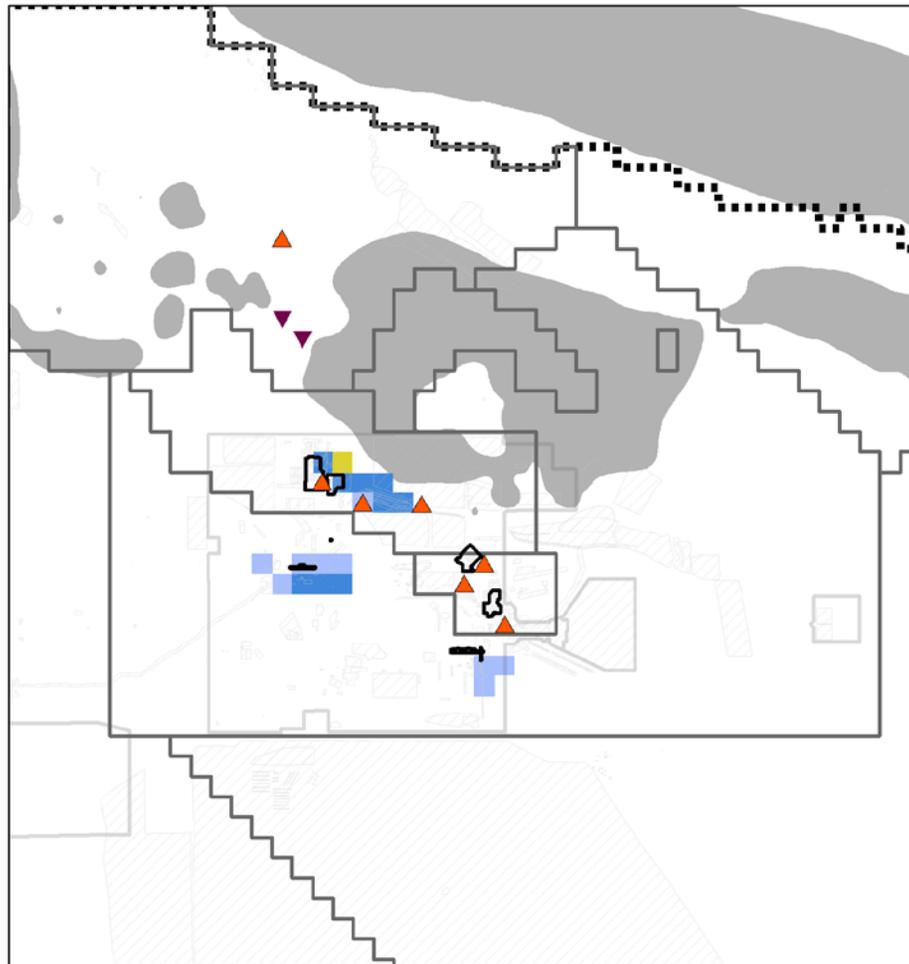
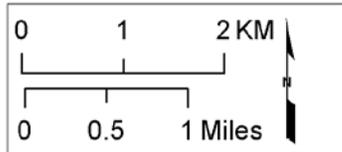
**15 Years
Uranium
Scenario 4
Continuing Source**



P2R_FS_u238_15.png (DoubleFigure_FS.mxd)

Figure B-216 - Plan view contours of the uranium plume at simulation time 15 years based on the scenario 4 simulation with a continuing source term.

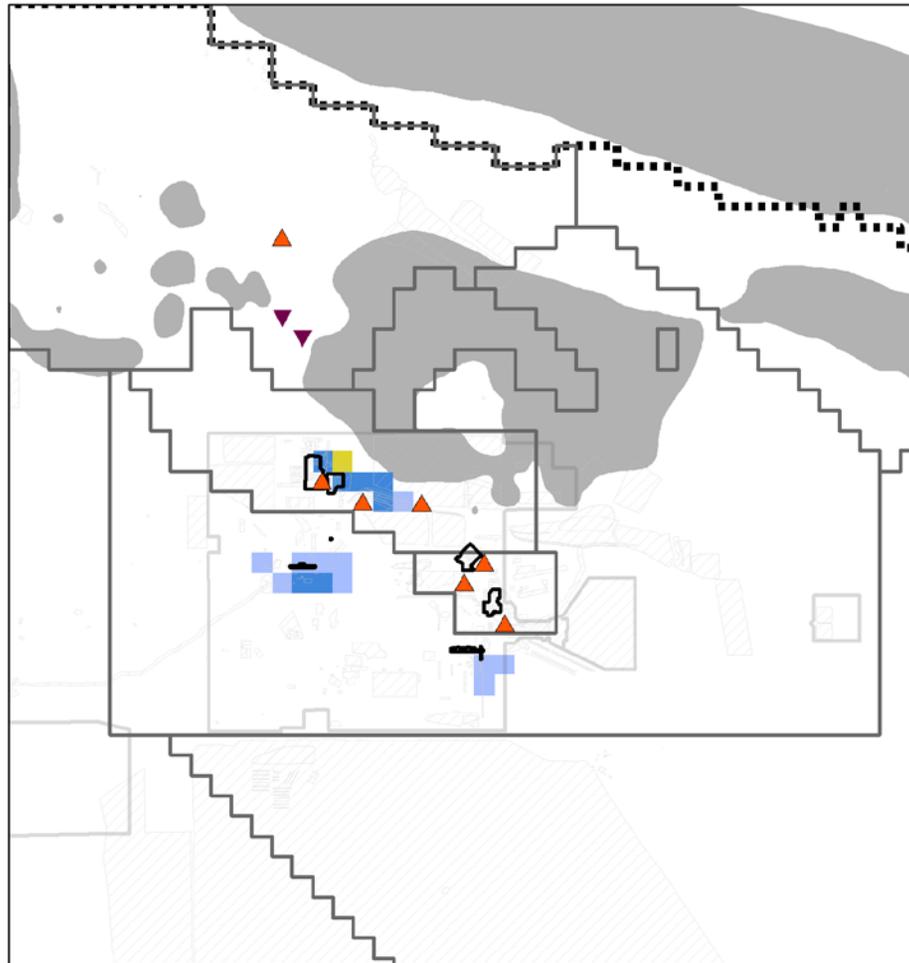
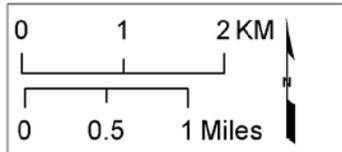
**20 Years
Uranium
Scenario 4
Continuing Source**



P2R_FS_u238_20.png (DoubleFigure_FS.mxd)

Figure B-217 - Plan view contours of the uranium plume at simulation time 20 years based on the scenario 4 simulation with a continuing source term.

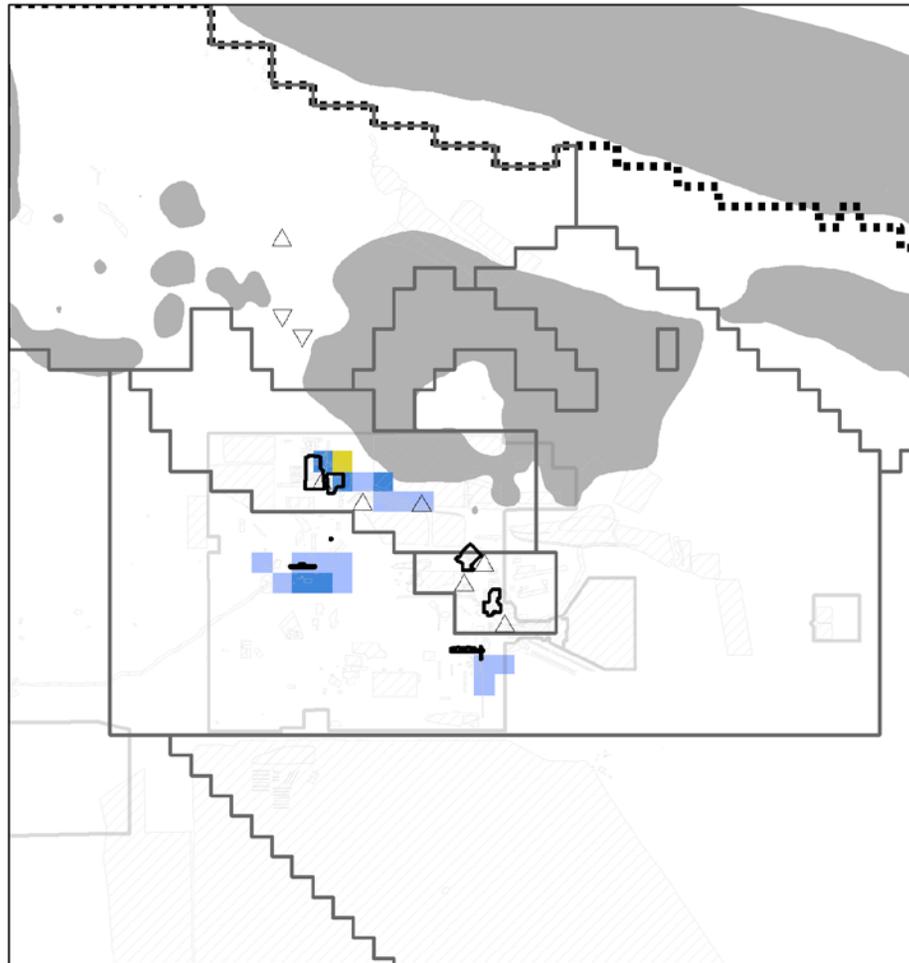
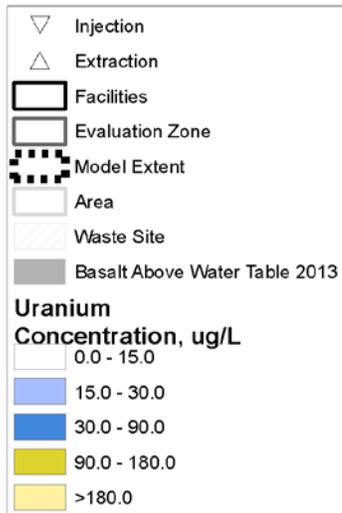
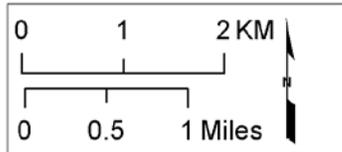
**25 Years
Uranium
Scenario 4
Continuing Source**



P2R_FS_u238_25.png (DoubleFigure_FS.mxd)

Figure B-218 - Plan view contours of the uranium plume at simulation time 25 years based on the scenario 4 simulation with a continuing source term.

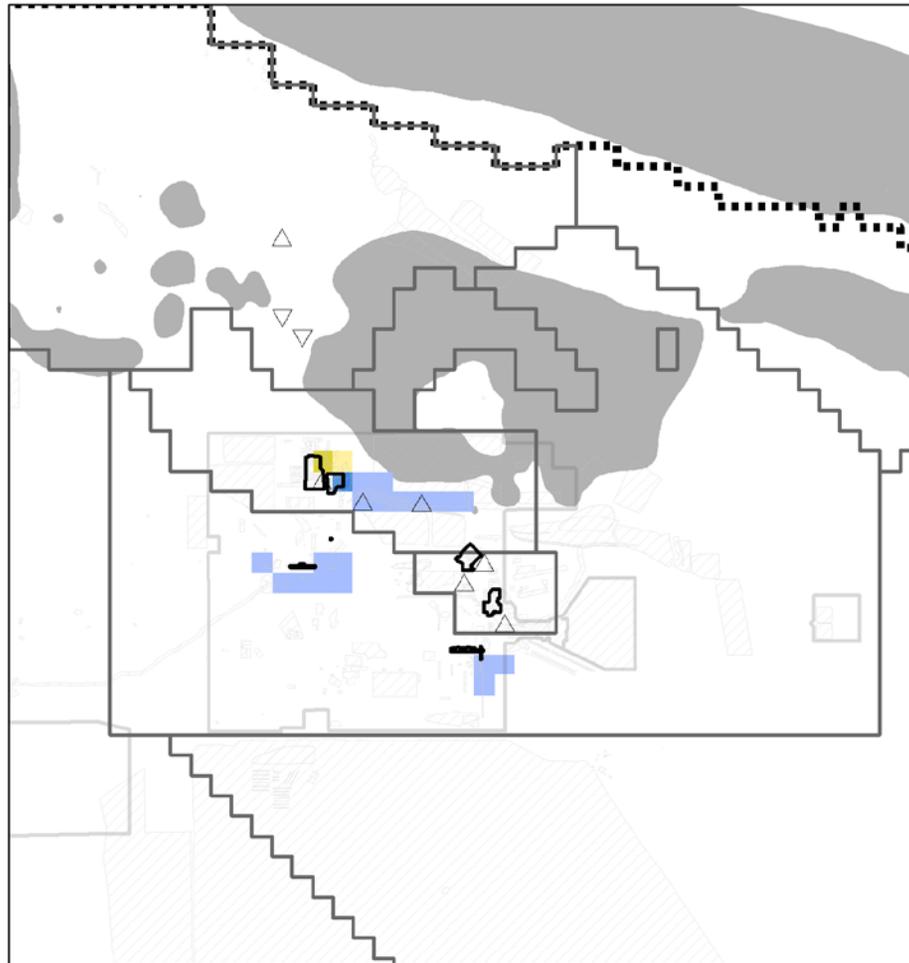
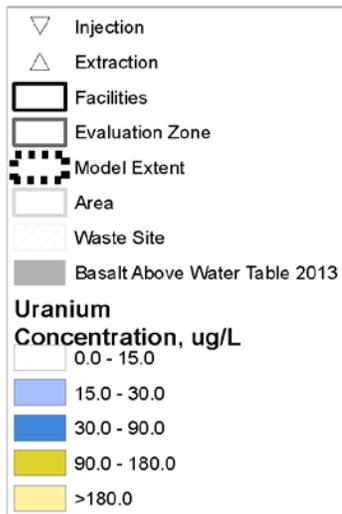
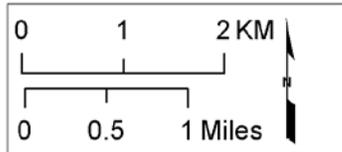
**30 Years
Uranium
Scenario 4
Continuing Source**



P2R_FS_u238_30.png (DoubleFigure_FS.mxd)

Figure B-219 - Plan view contours of the uranium plume at simulation time 30 years based on the scenario 4 simulation with a continuing source term.

**50 Years
Uranium
Scenario 4
Continuing Source**



P2R_FS_u238_50.png (DoubleFigure_FS.mxd)

Figure B-220 - Plan view contours of the uranium plume at simulation time 50 years based on the scenario 4 simulation with a continuing source term.

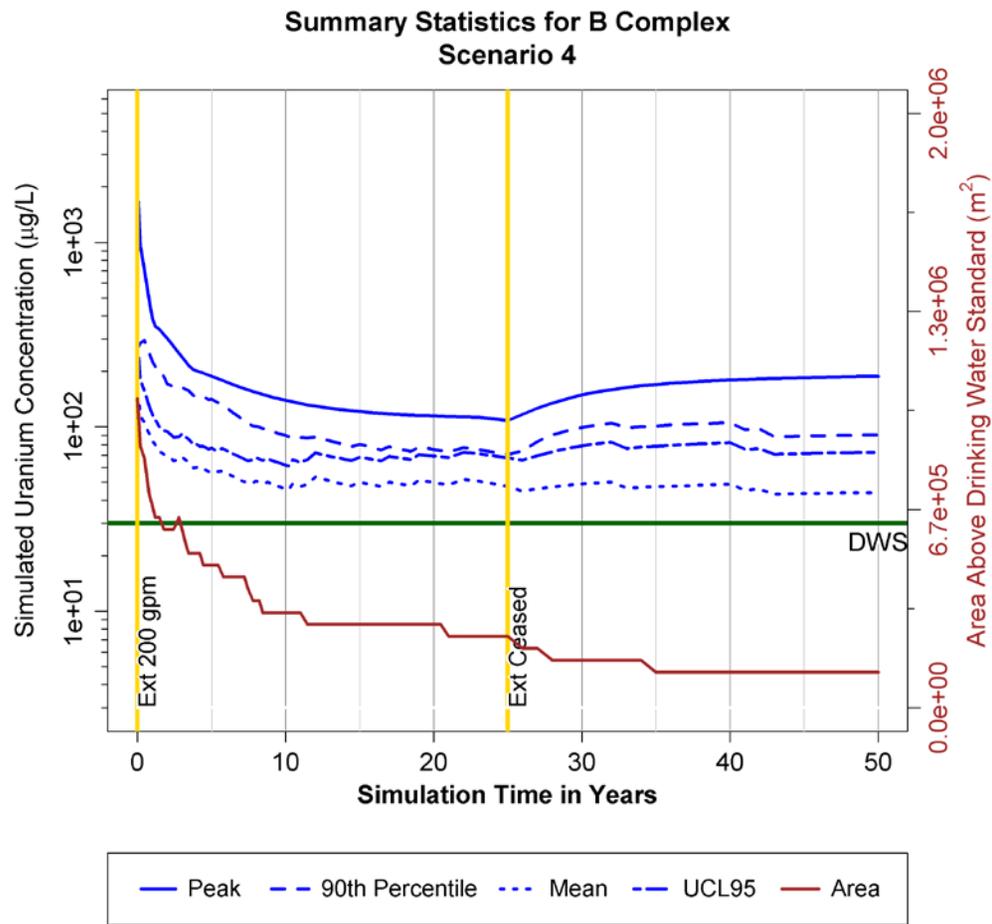


Figure B-221 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 4 simulation with a continuing source term.

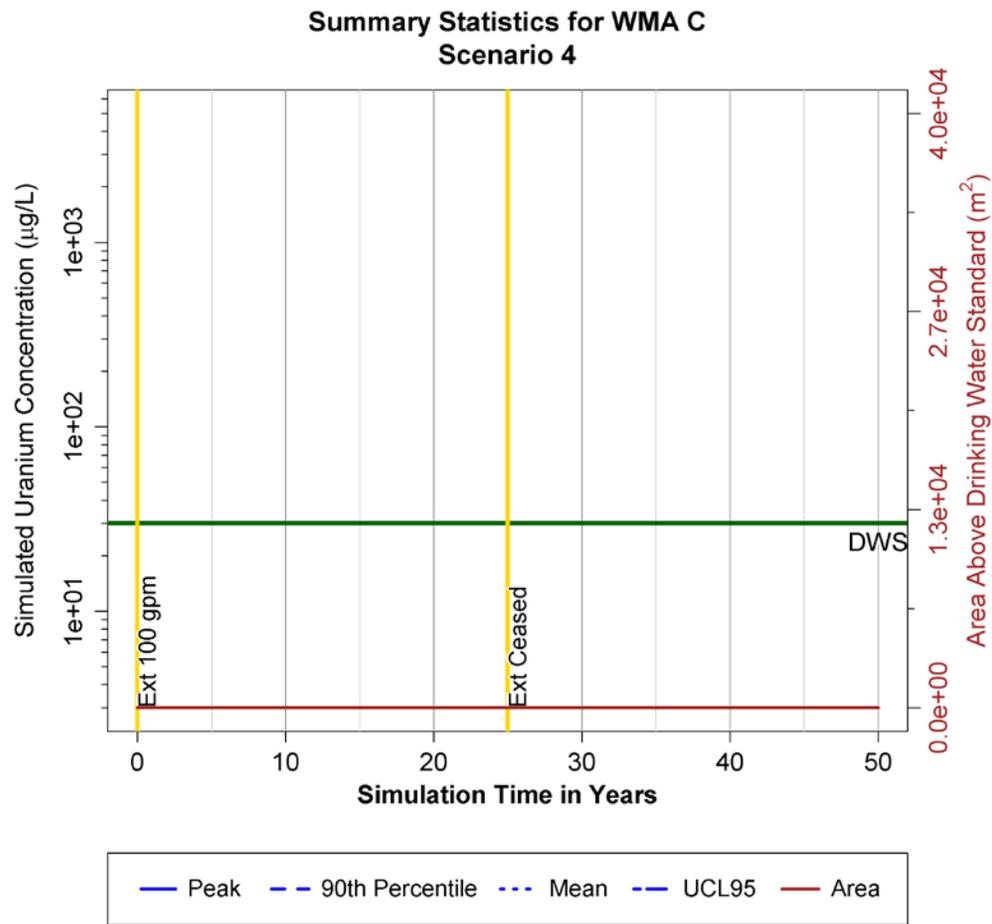


Figure B-222 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 4 simulation with a continuing source term.

Summary Statistics for Greater 200 East
Scenario 4

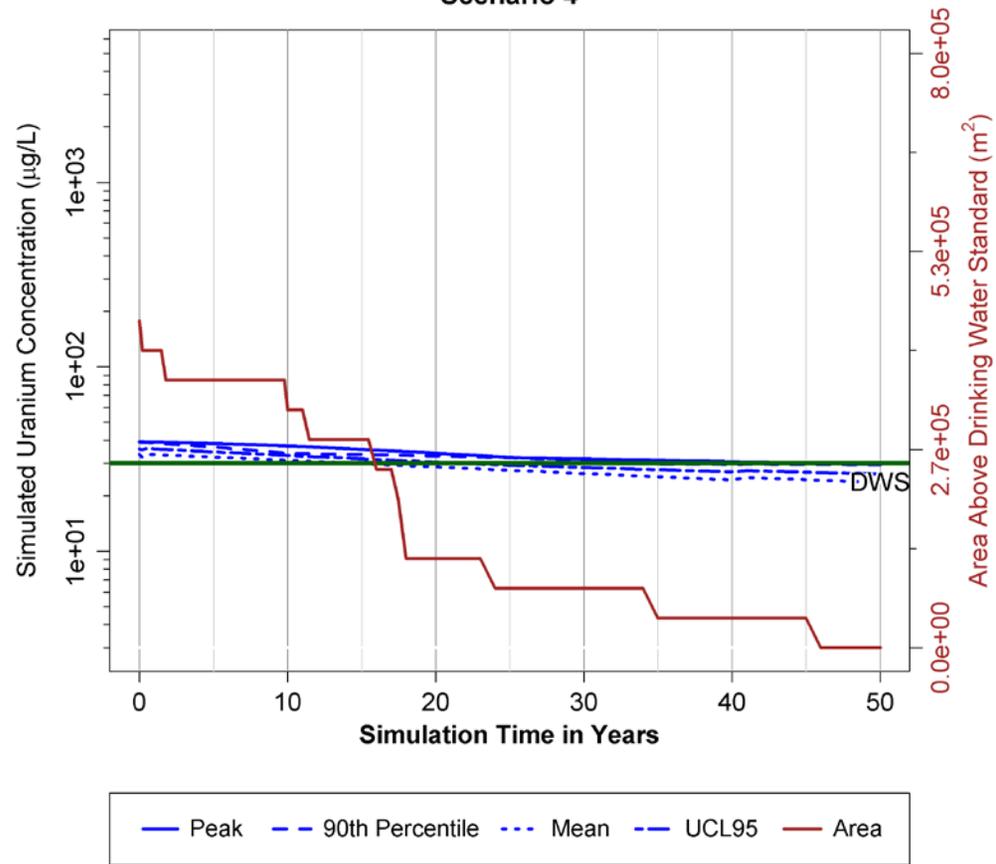


Figure B-223 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 4 simulation with a continuing source term.

Summary Statistics for Gable Gap Area
Scenario 4

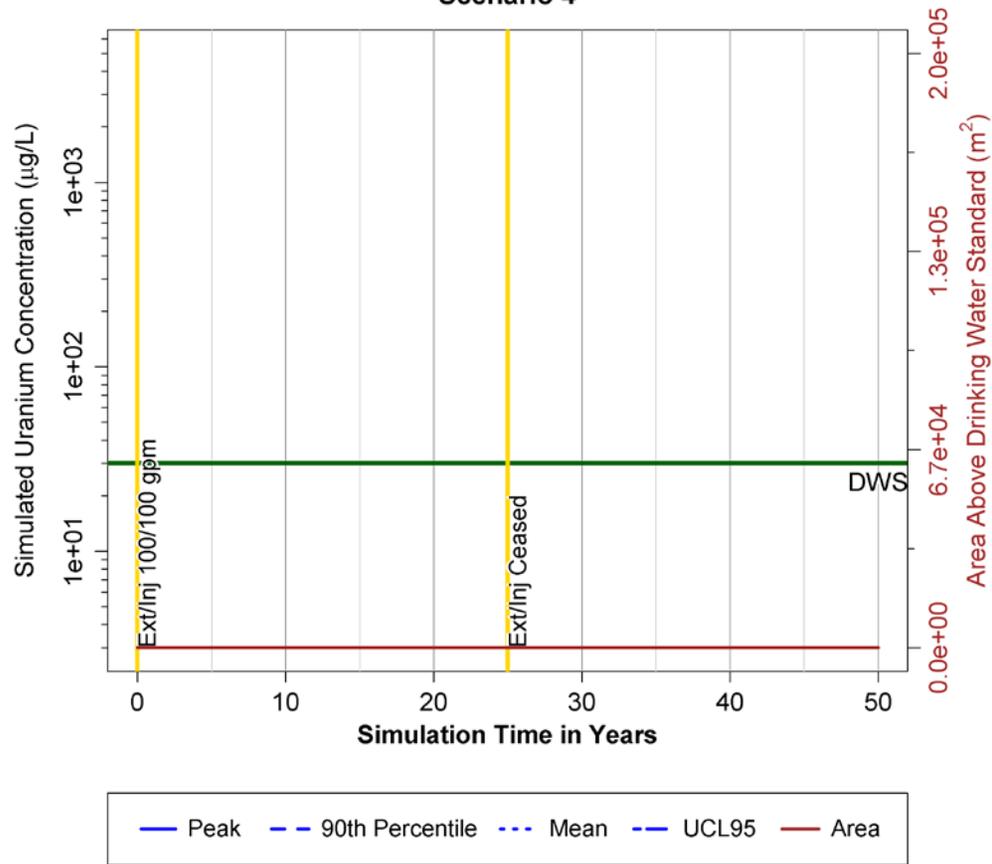
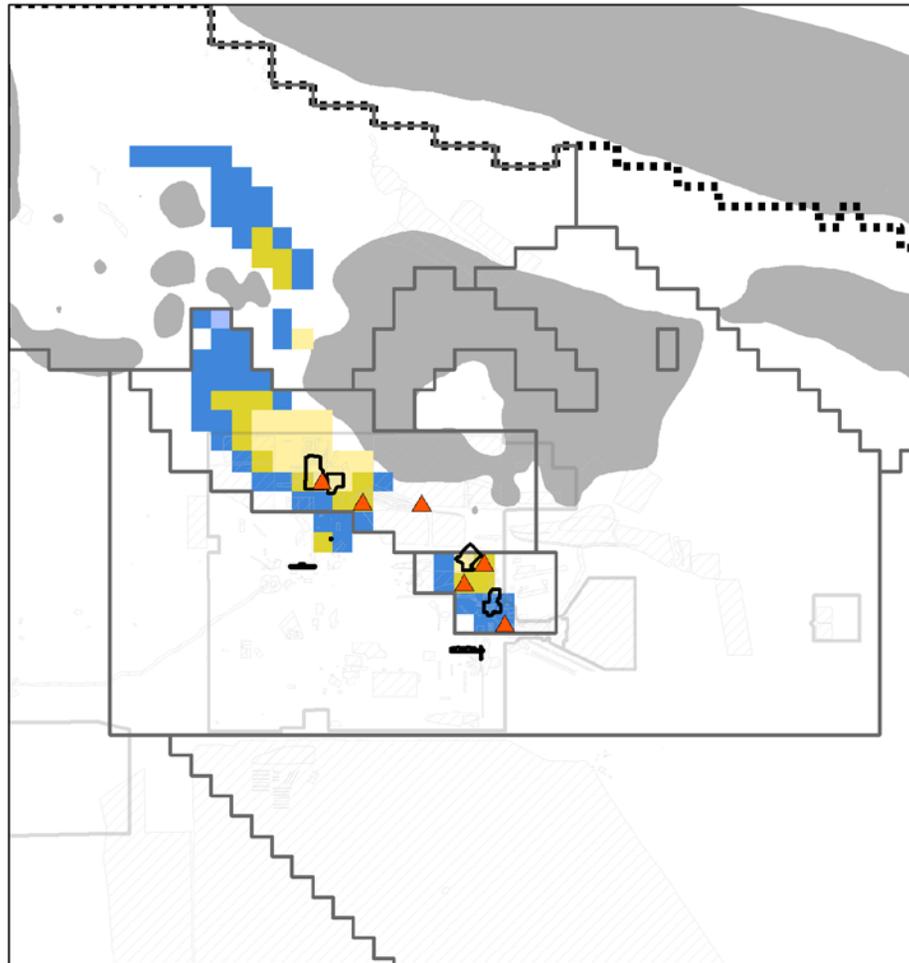
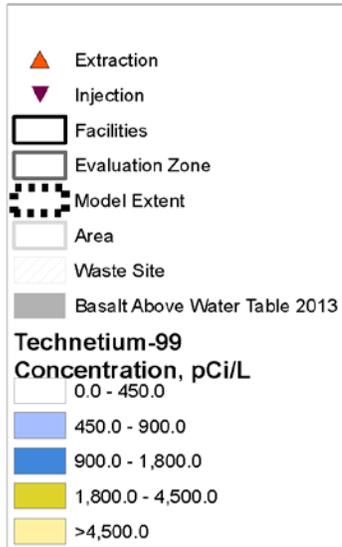
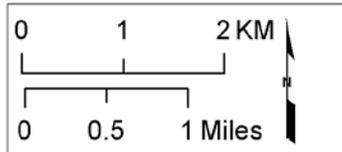


Figure B-224 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 4 simulation with a continuing source term.

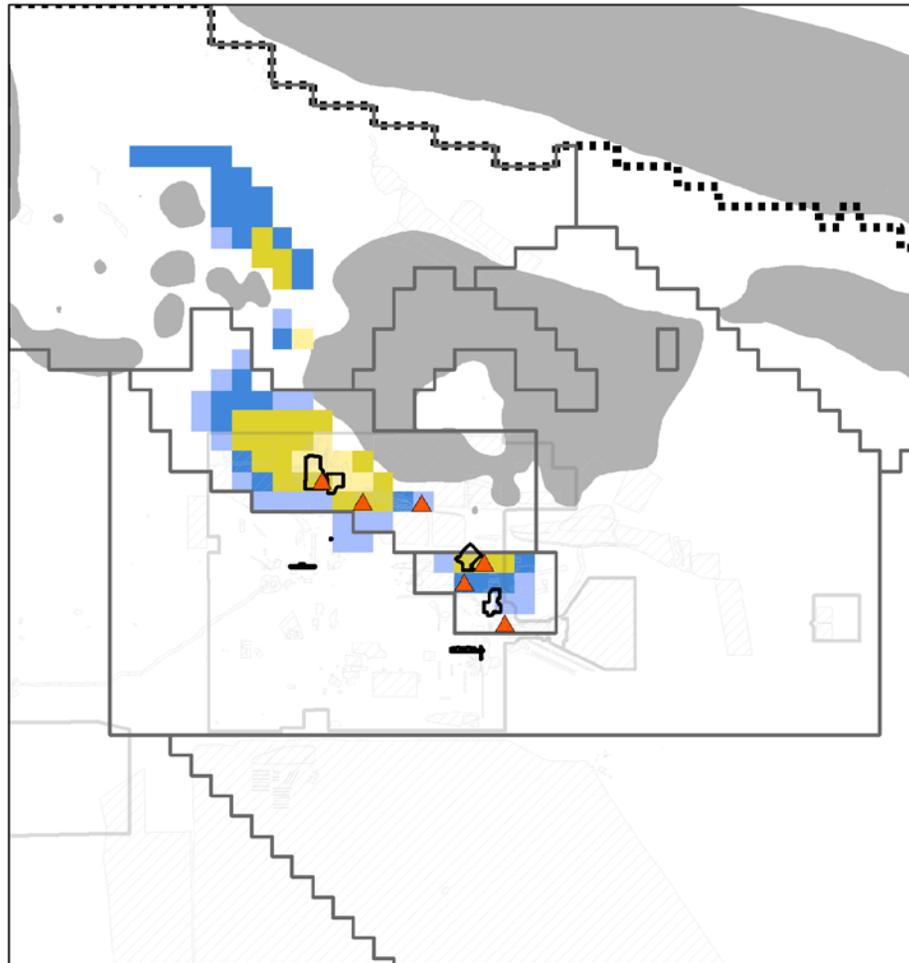
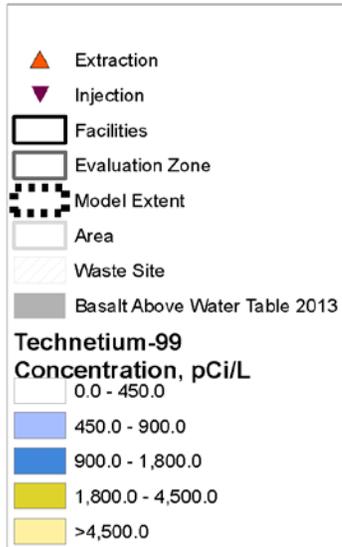
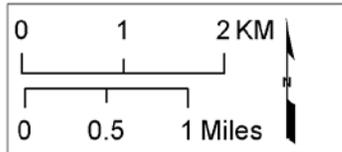
**0 Years
Technetium-99
Scenario 5**



P2R_FS_tc99_0.png (DoubleFigure_FS.mxd)

Figure B-225 - Plan view contours of the technetium-99 plume at simulation time 0 years based on the scenario 5 simulation.

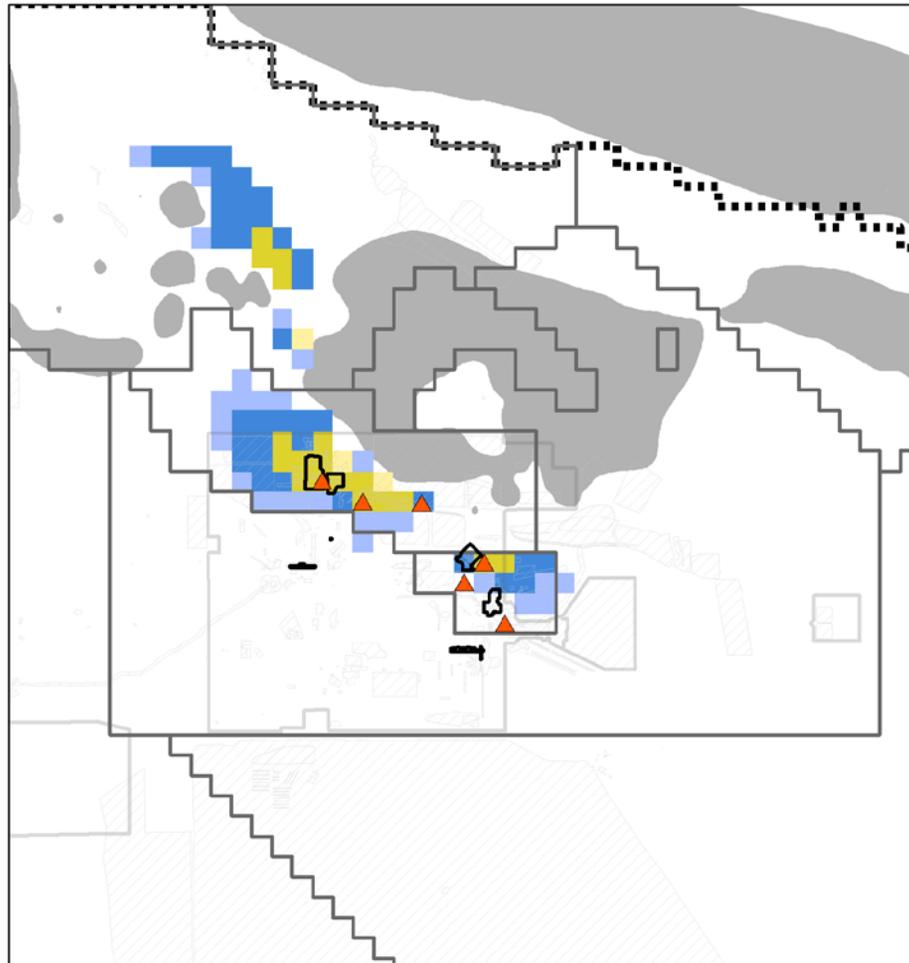
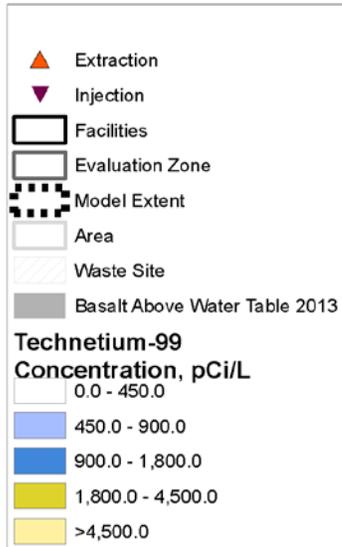
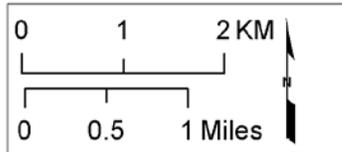
**1 Years
Technetium-99
Scenario 5**



P2R_FS_tc99_1.png (DoubleFigure_FS.mxd)

Figure B-226 - Plan view contours of the technetium-99 plume at simulation time 1 years based on the scenario 5 simulation.

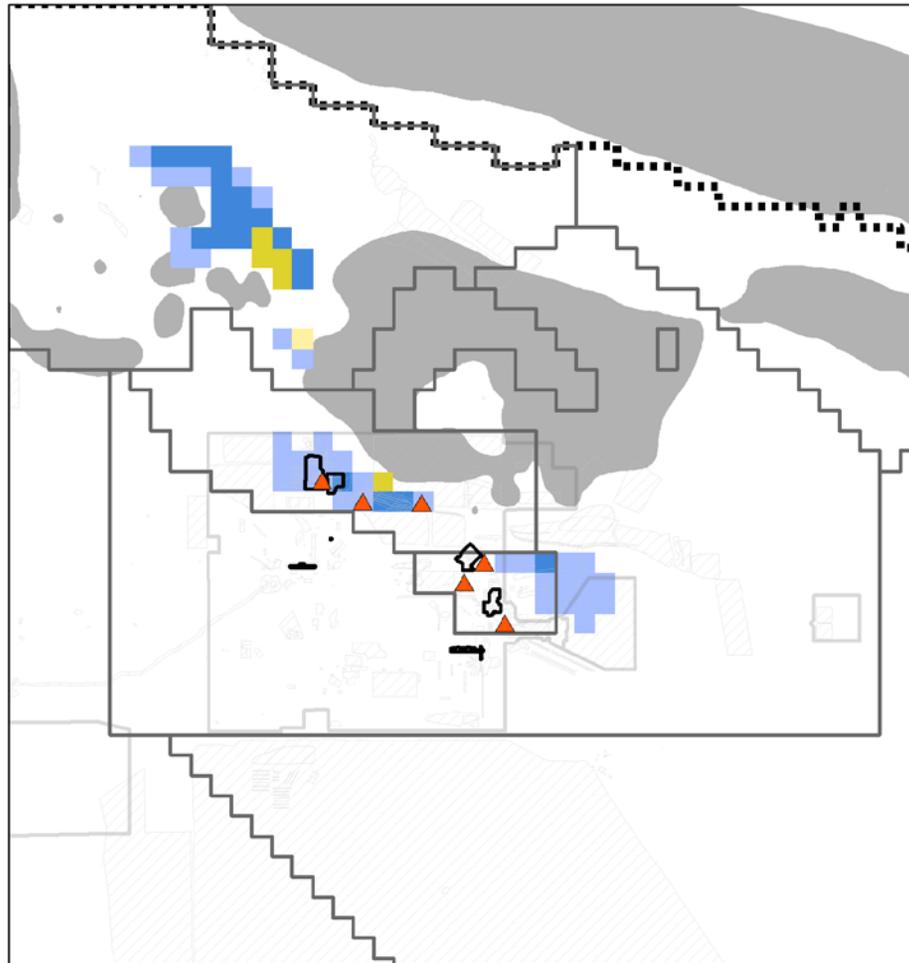
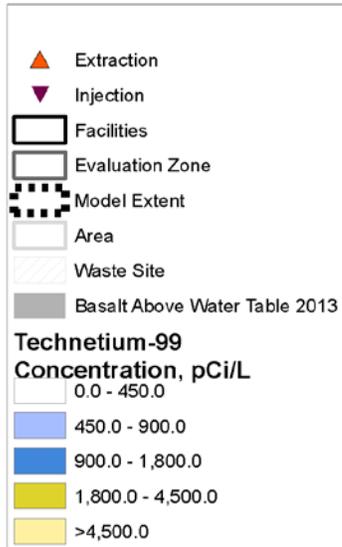
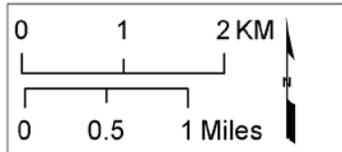
**2 Years
Technetium-99
Scenario 5**



P2R_FS_tc99_2.png (DoubleFigure_FS.mxd)

Figure B-227 - Plan view contours of the technetium-99 plume at simulation time 2 years based on the scenario 5 simulation.

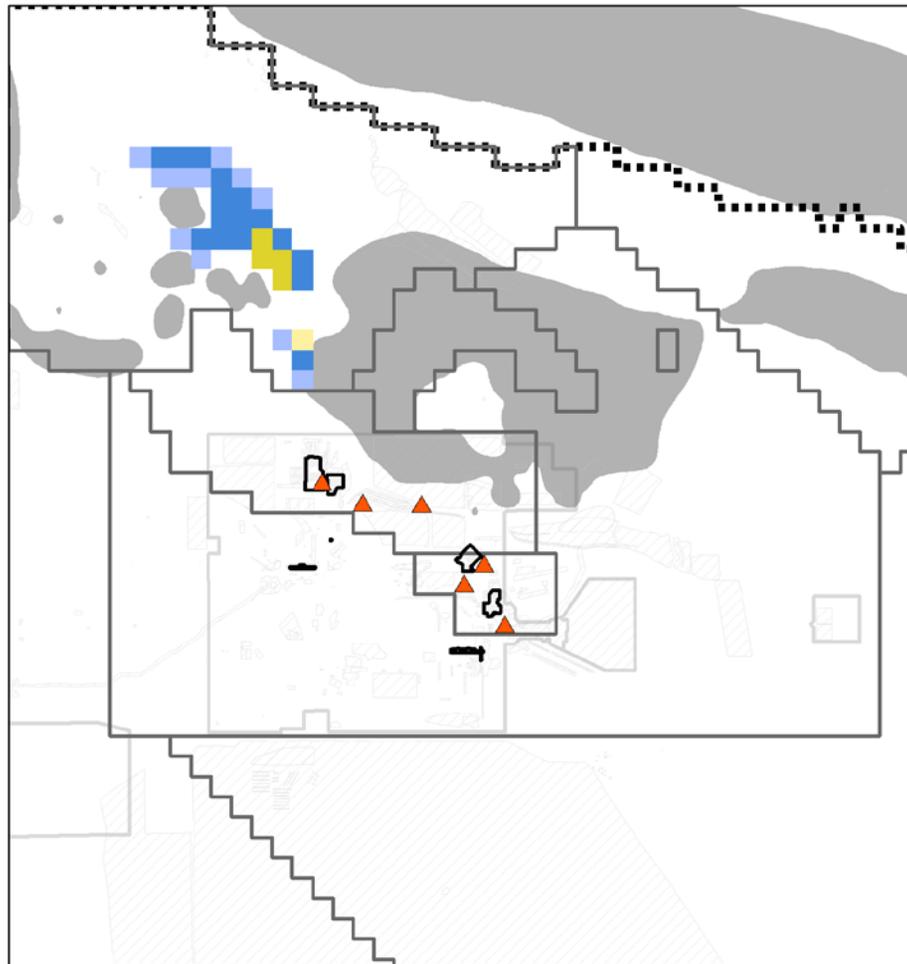
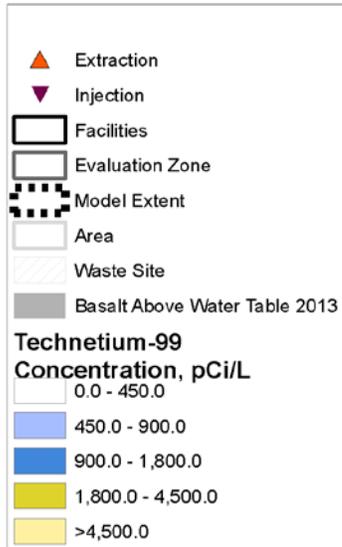
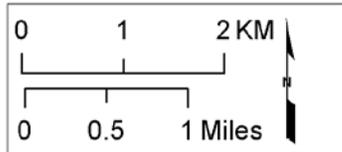
**5 Years
Technetium-99
Scenario 5**



P2R_FS_tc99_5.png (DoubleFigure_FS.mxd)

Figure B-228 - Plan view contours of the technetium-99 plume at simulation time 5 years based on the scenario 5 simulation.

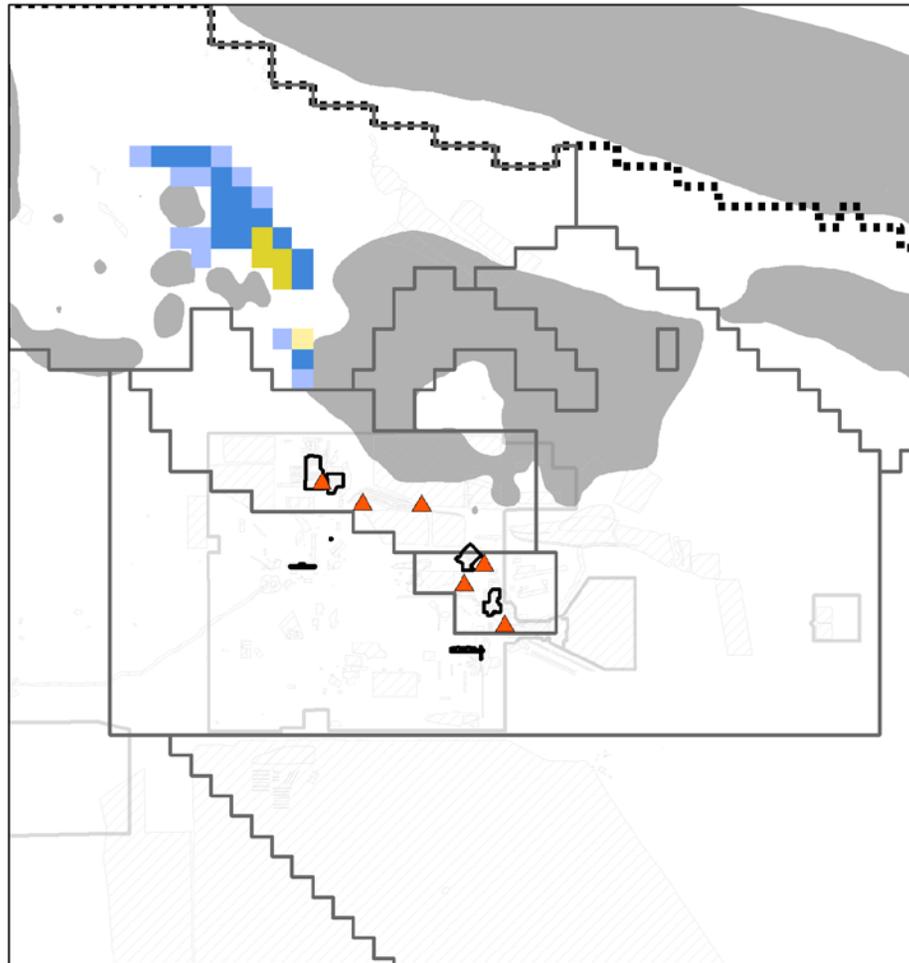
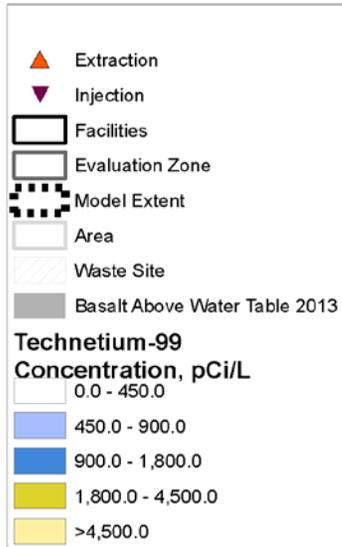
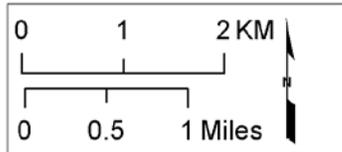
**10 Years
Technetium-99
Scenario 5**



P2R_FS_tc99_10.png (DoubleFigure_FS.mxd)

Figure B-229 - Plan view contours of the technetium-99 plume at simulation time 10 years based on the scenario 5 simulation.

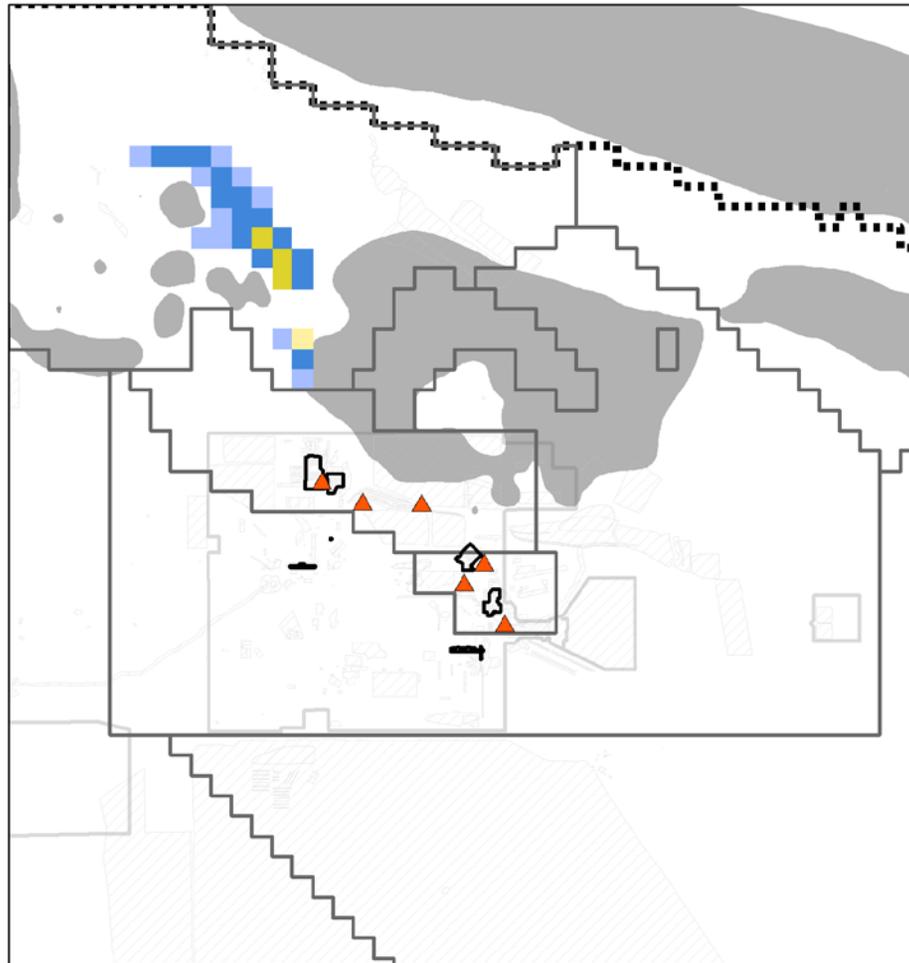
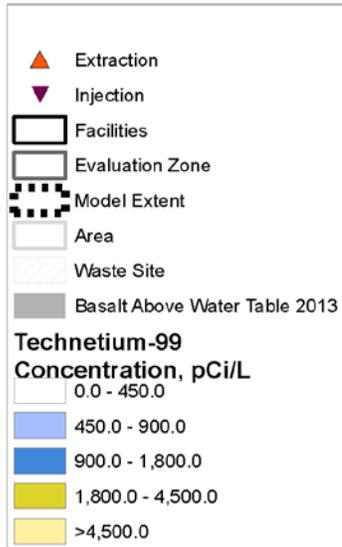
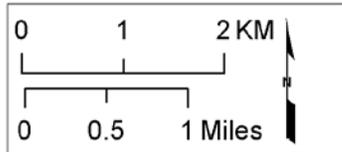
**15 Years
Technetium-99
Scenario 5**



P2R_FS_tc99_15.png (DoubleFigure_FS.mxd)

Figure B-230 - Plan view contours of the technetium-99 plume at simulation time 15 years based on the scenario 5 simulation.

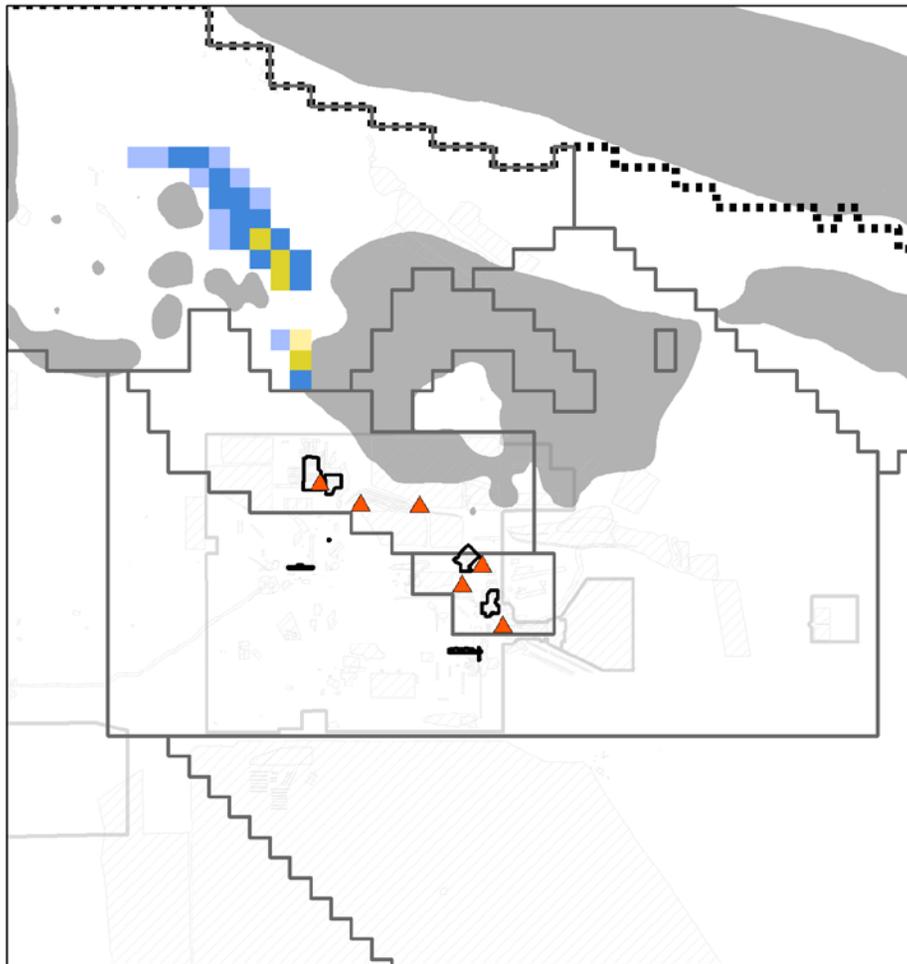
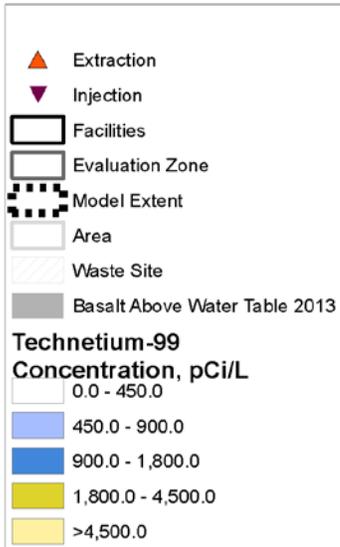
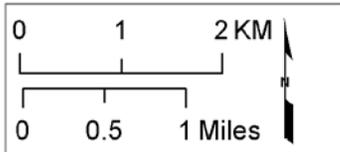
**20 Years
Technetium-99
Scenario 5**



P2R_FS_tc99_20.png (DoubleFigure_FS.mxd)

Figure B-231 - Plan view contours of the technetium-99 plume at simulation time 20 years based on the scenario 5 simulation.

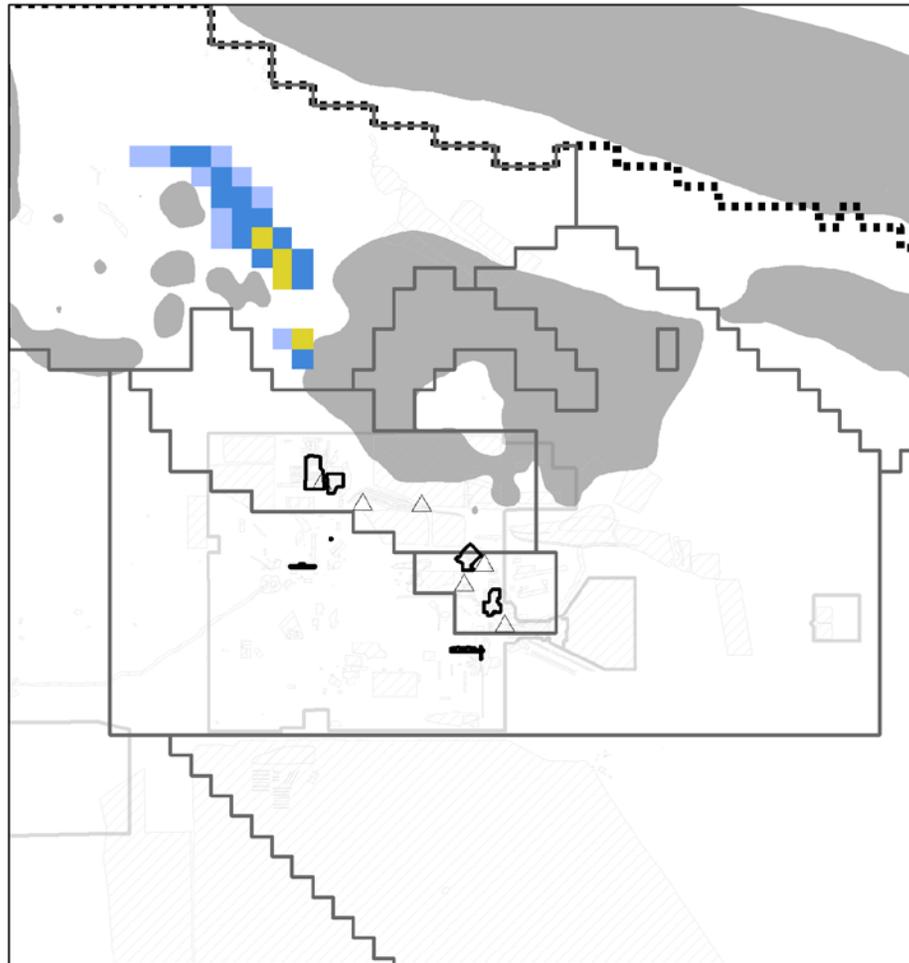
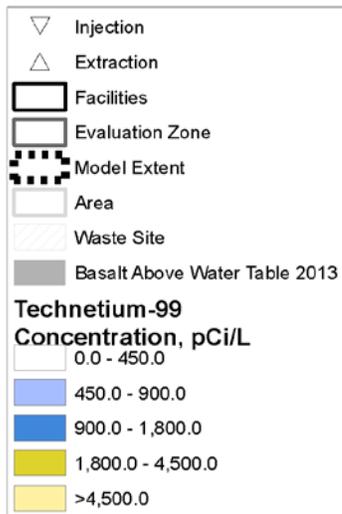
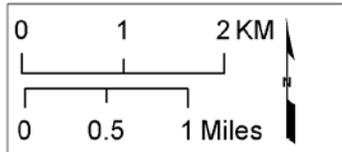
**25 Years
Technetium-99
Scenario 5**



P2R_FS_tc99_25.png (DoubleFigure_FS.mxd)

Figure B-232 - Plan view contours of the technetium-99 plume at simulation time 25 years based on the scenario 5 simulation.

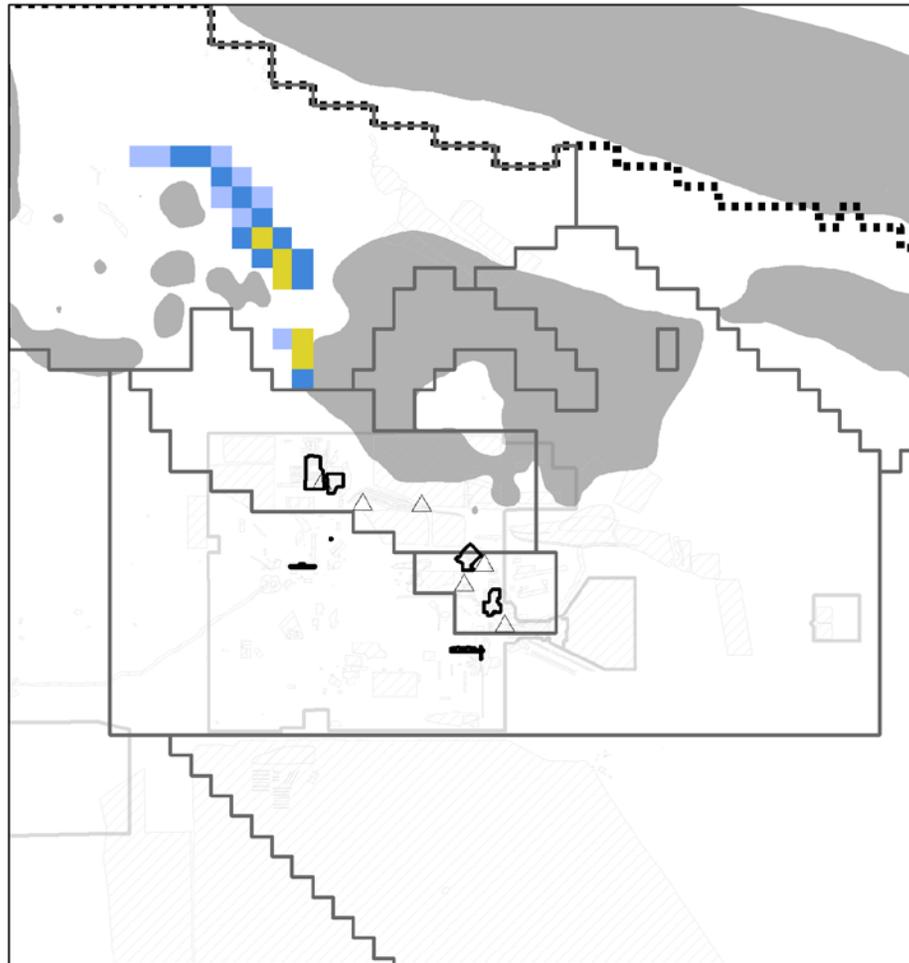
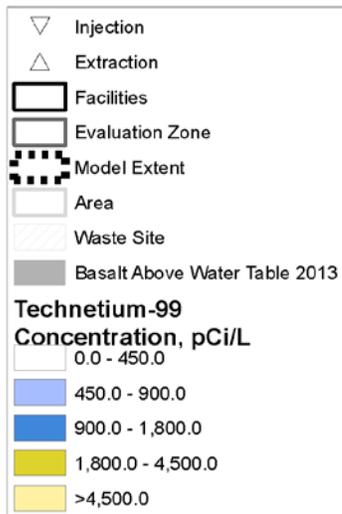
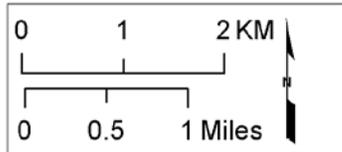
**30 Years
Technetium-99
Scenario 5**



P2R_FS_tc99_30.png (DoubleFigure_FS.mxd)

Figure B-233 - Plan view contours of the technetium-99 plume at simulation time 30 years based on the scenario 5 simulation.

**50 Years
Technetium-99
Scenario 5**



P2R_FS_tc99_50.png (DoubleFigure_FS.mxd)

Figure B-234 - Plan view contours of the technetium-99 plume at simulation time 50 years based on the scenario 5 simulation.

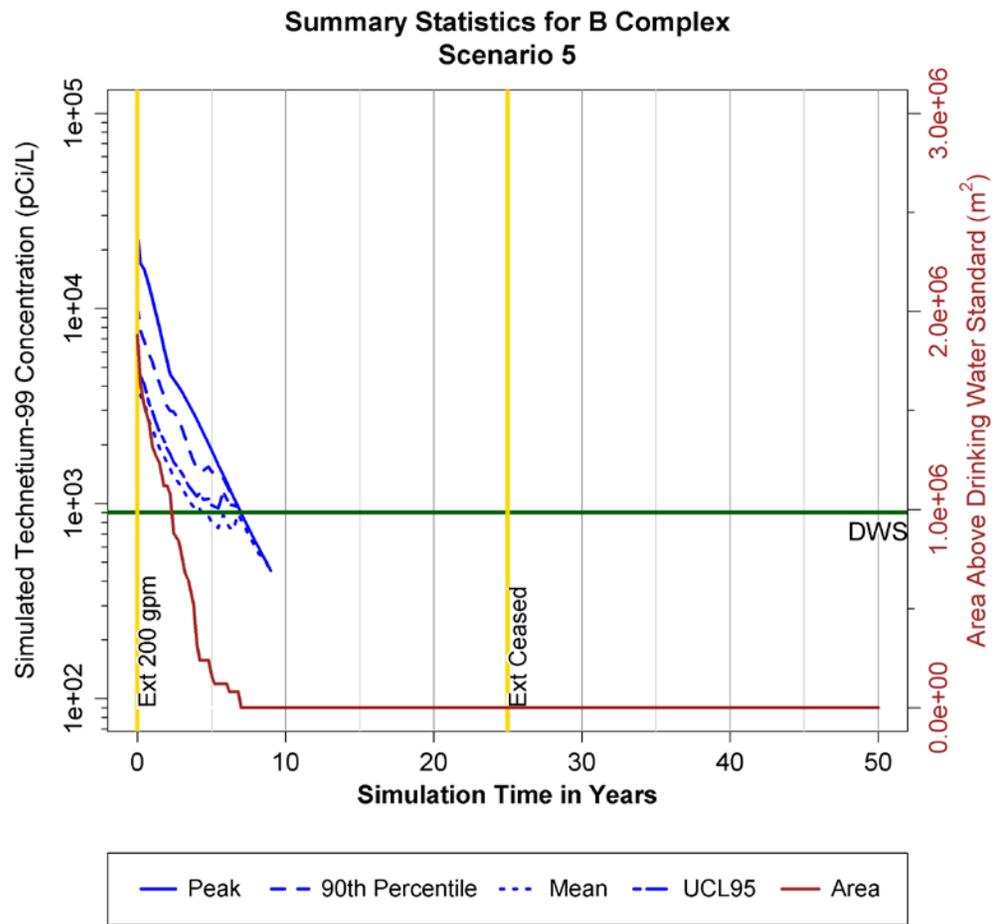


Figure B-235 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 5 simulation.

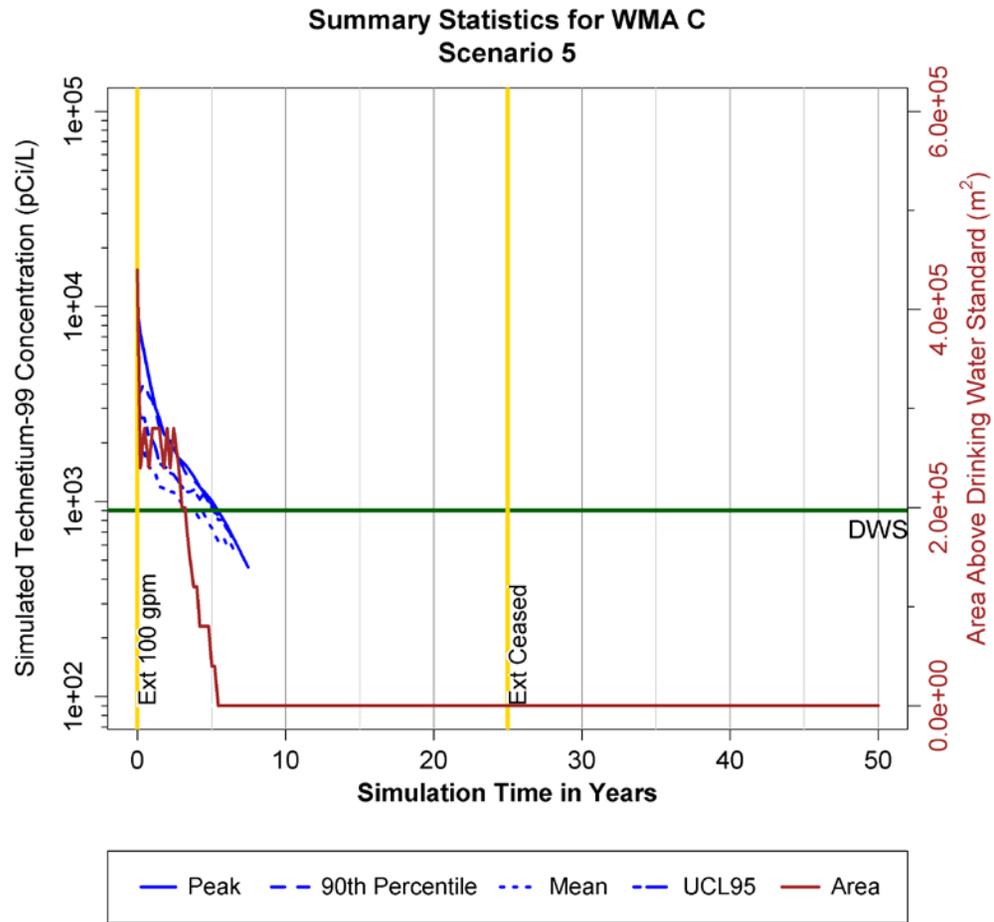


Figure B-236 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 5 simulation.

Summary Statistics for Greater 200 East
Scenario 5

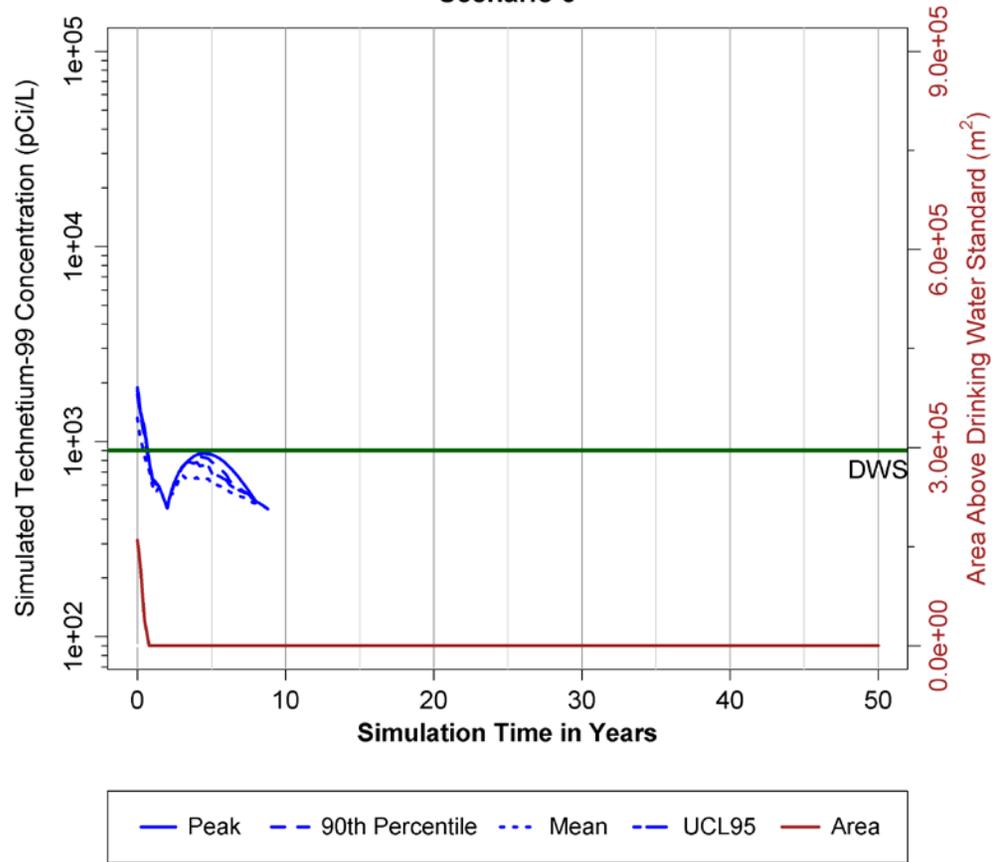


Figure B-237 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 5 simulation.

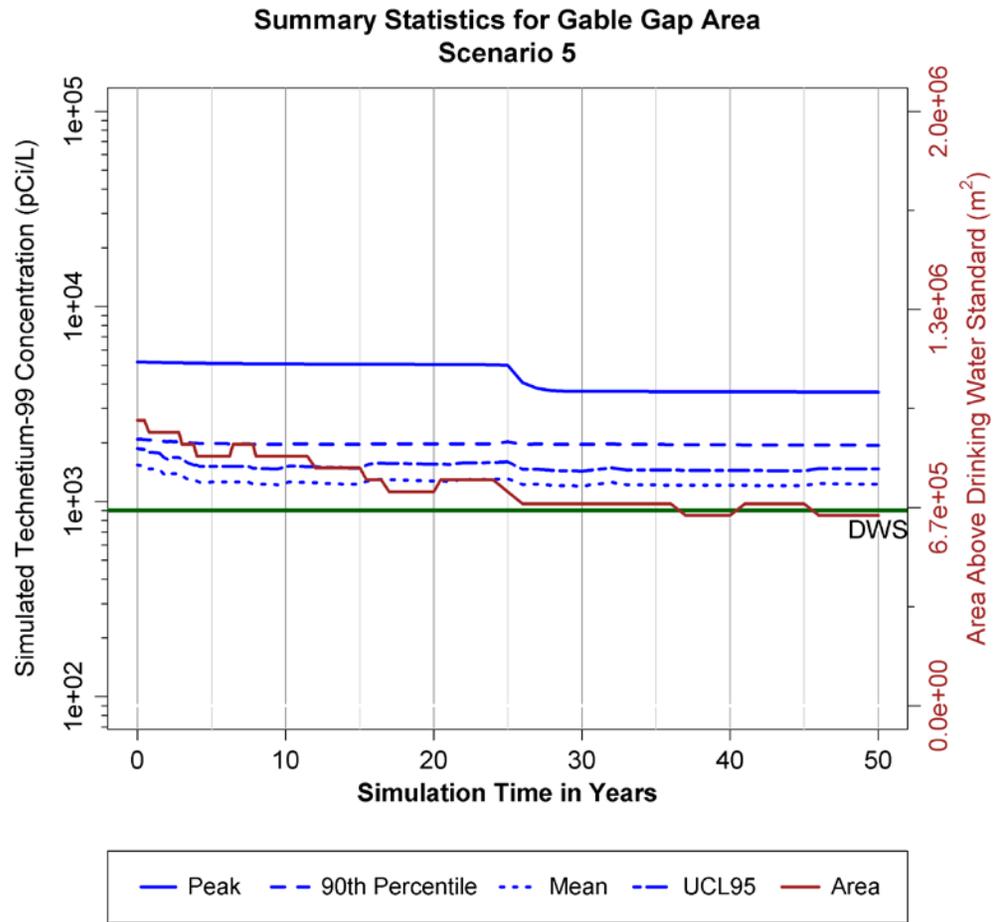
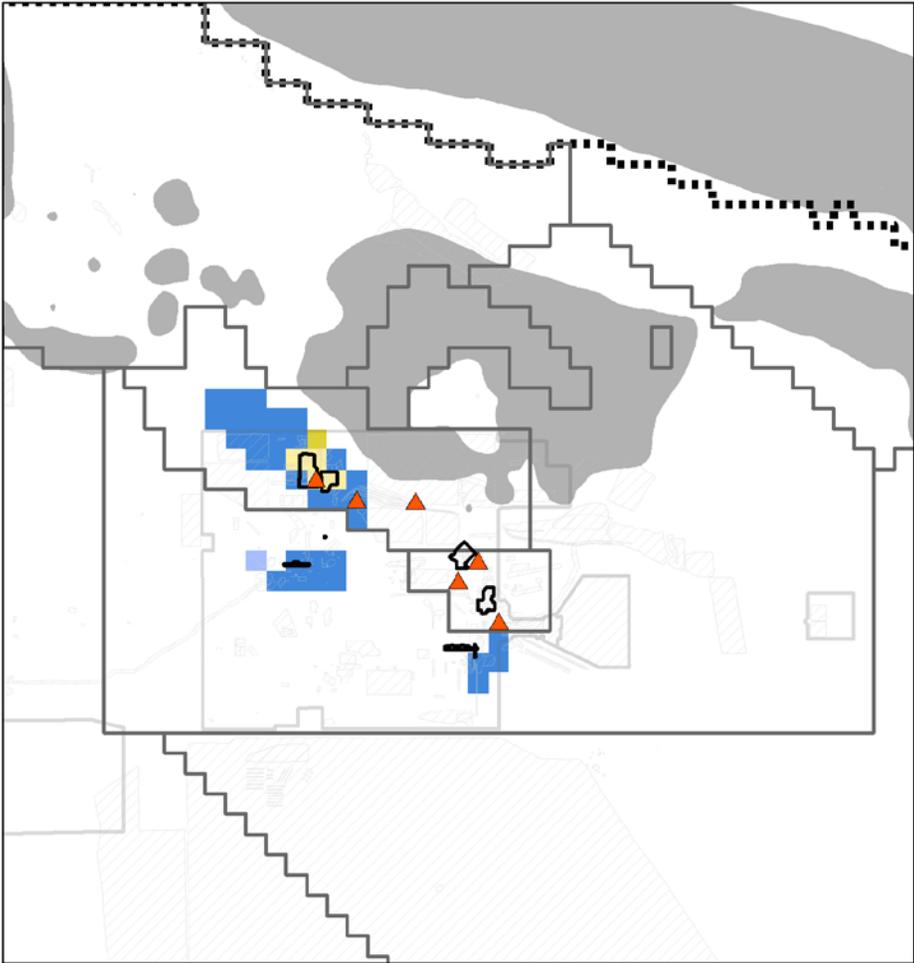
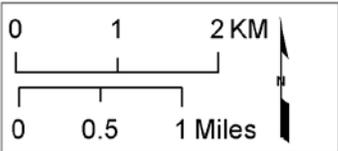


Figure B-238 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 5 simulation.

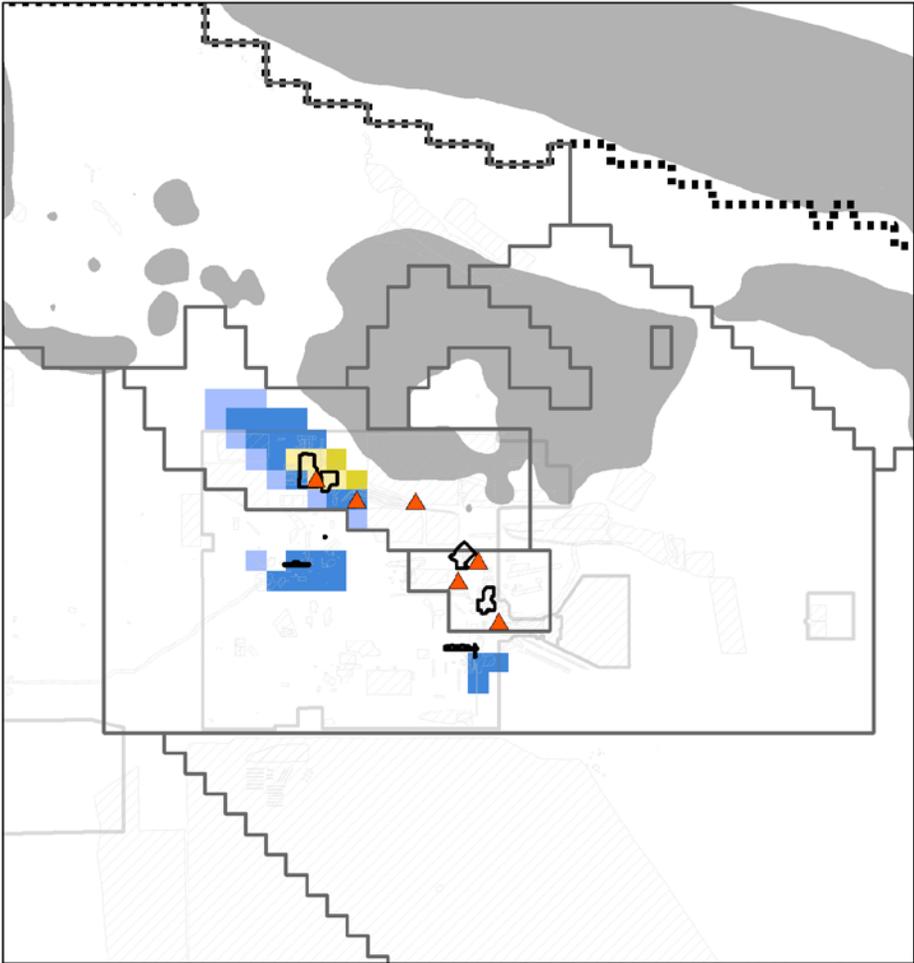
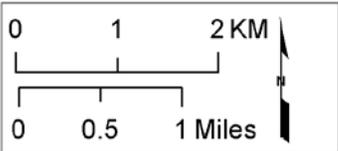
**0 Years
Uranium
Scenario 5**



P2R_FS_u238_0.png (DoubleFigure_FS.mxd)

Figure B-239 - Plan view contours of the uranium plume at simulation time 0 years based on the scenario 5 simulation.

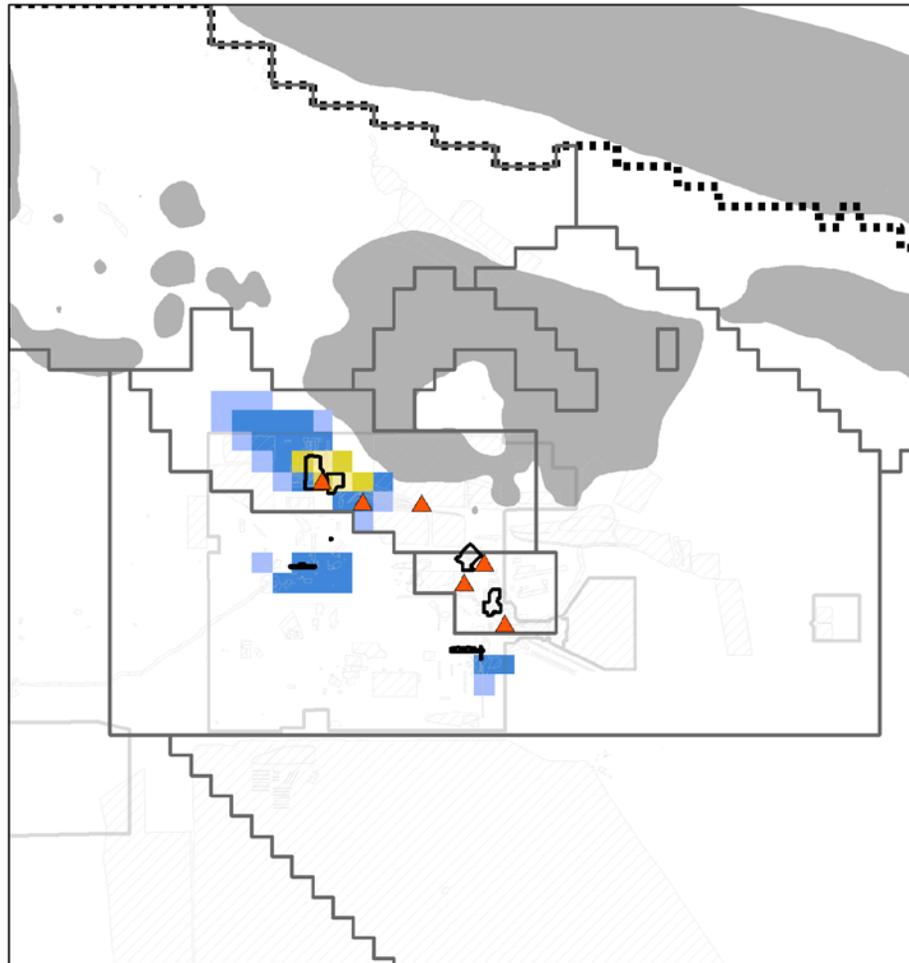
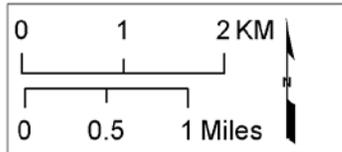
**1 Years
Uranium
Scenario 5**



P2R_FS_u238_1.png (DoubleFigure_FS.mxd)

Figure B-240 - Plan view contours of the uranium plume at simulation time 1 years based on the scenario 5 simulation.

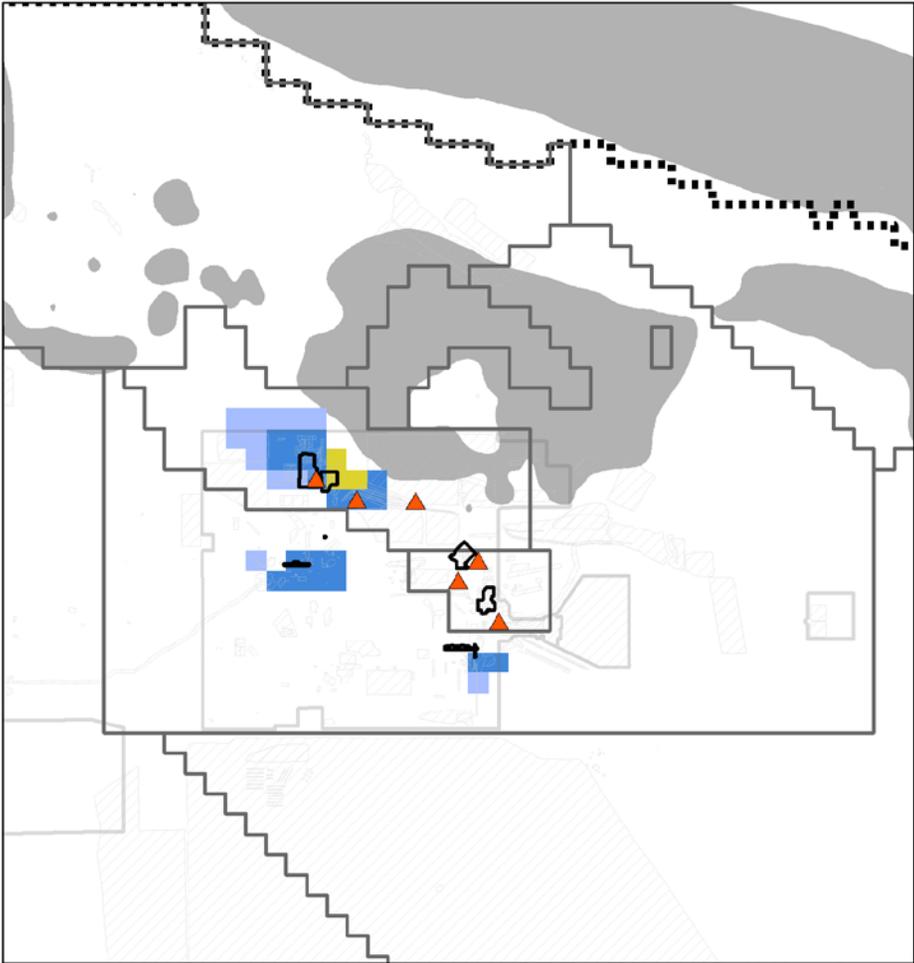
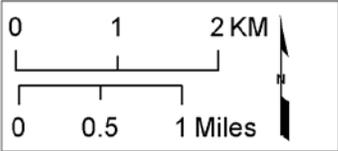
**2 Years
Uranium
Scenario 5**



P2R_FS_u238_2.png (DoubleFigure_FS.mxd)

Figure B-241 - Plan view contours of the uranium plume at simulation time 2 years based on the scenario 5 simulation.

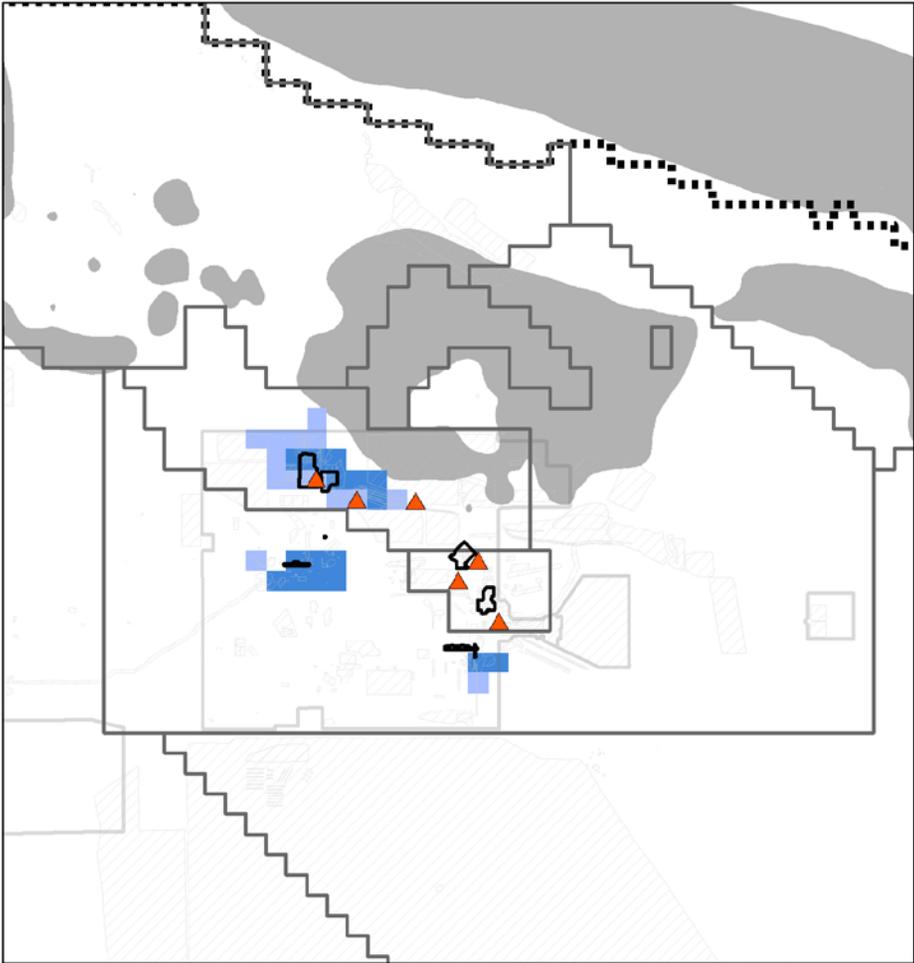
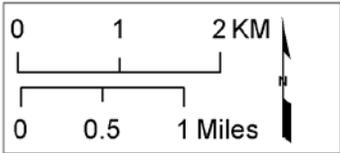
**5 Years
Uranium
Scenario 5**



P2R_FS_u238_5.png (DoubleFigure_FS.mxd)

Figure B-242 - Plan view contours of the uranium plume at simulation time 5 years based on the scenario 5 simulation.

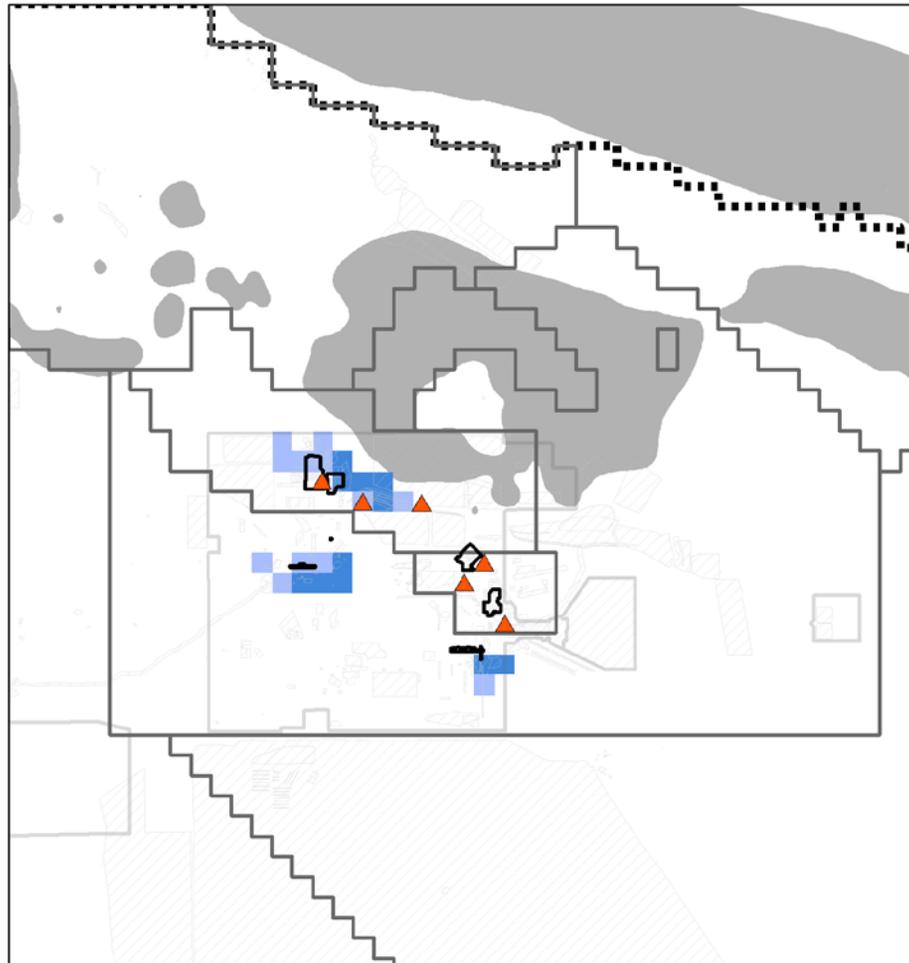
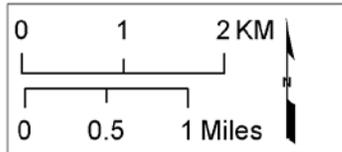
**10 Years
Uranium
Scenario 5**



P2R_FS_u238_10.png (DoubleFigure_FS.mxd)

Figure B-243 - Plan view contours of the uranium plume at simulation time 10 years based on the scenario 5 simulation.

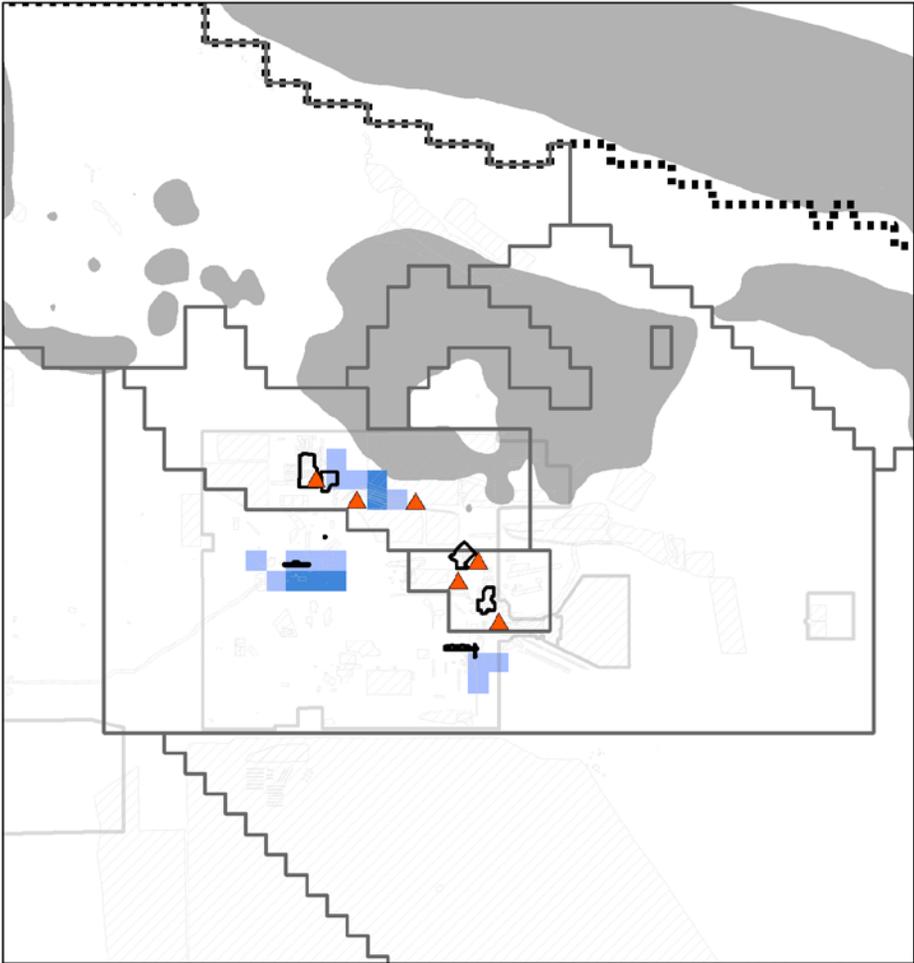
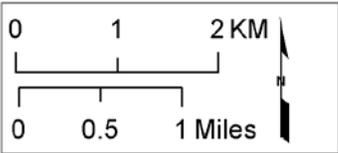
**15 Years
Uranium
Scenario 5**



P2R_FS_u238_15.png (DoubleFigure_FS.mxd)

Figure B-244 - Plan view contours of the uranium plume at simulation time 15 years based on the scenario 5 simulation.

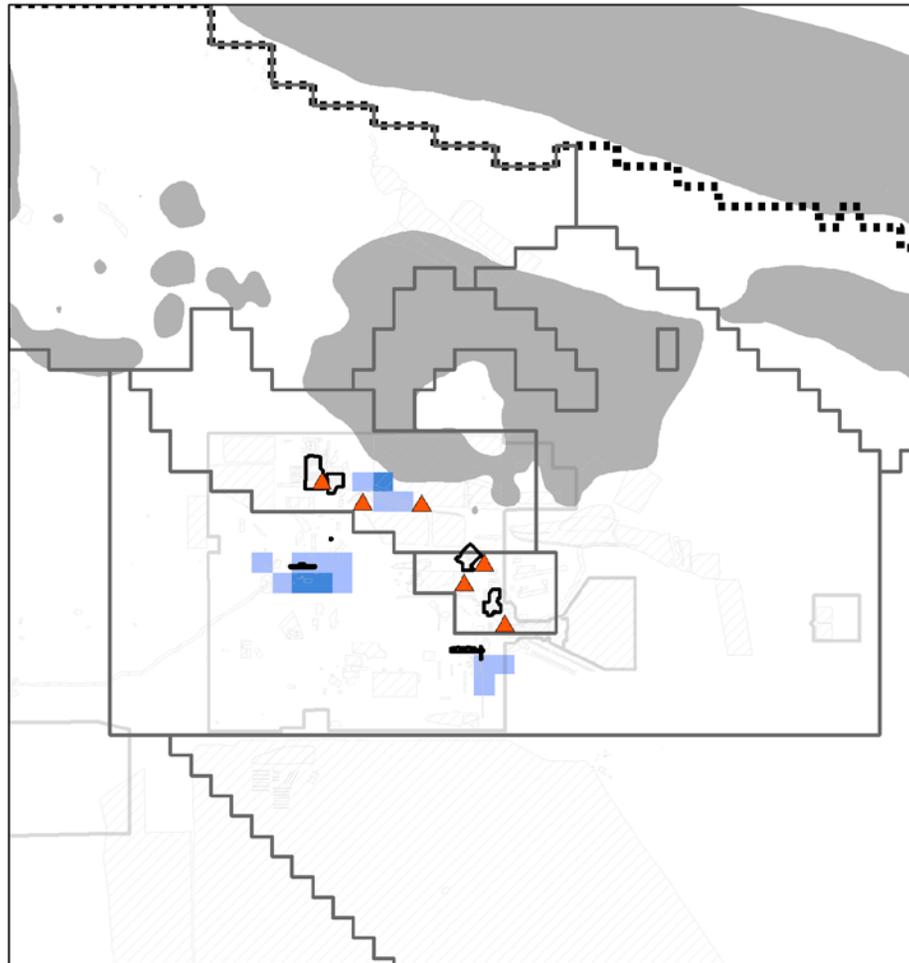
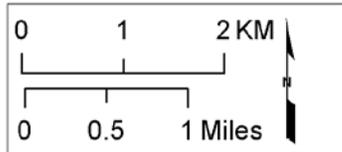
**20 Years
Uranium
Scenario 5**



P2R_FS_u238_20.png (DoubleFigure_FS.mxd)

Figure B-245 - Plan view contours of the uranium plume at simulation time 20 years based on the scenario 5 simulation.

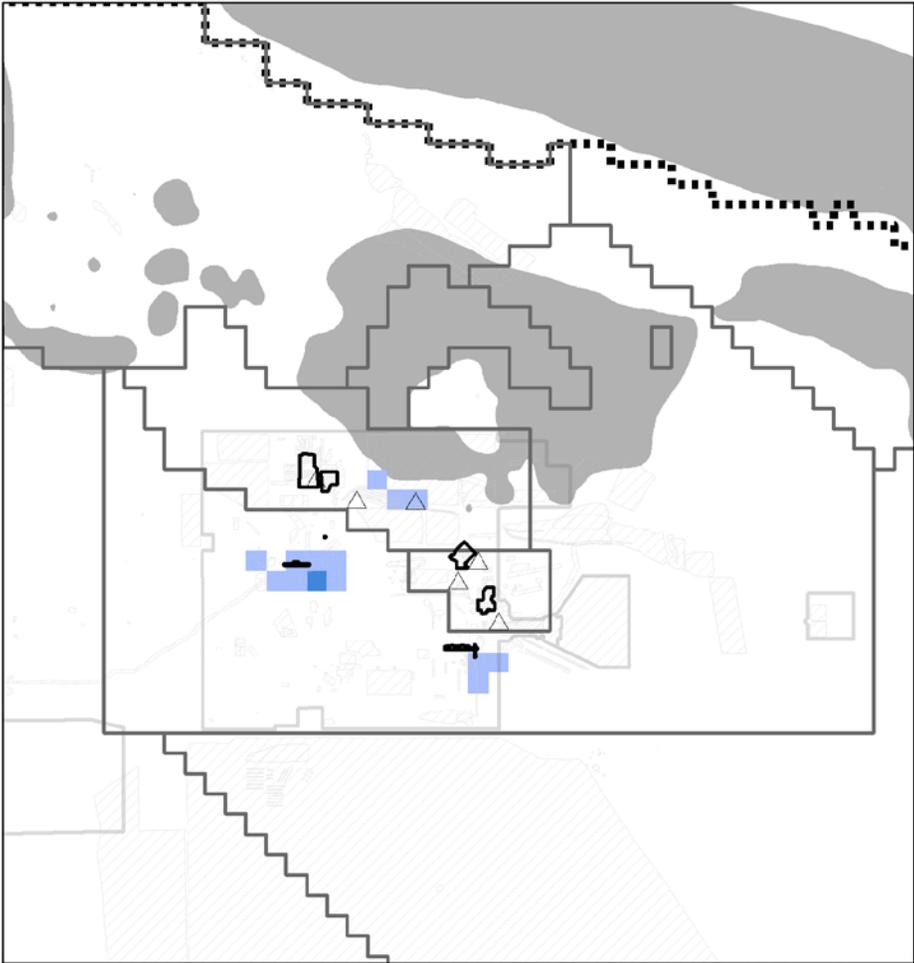
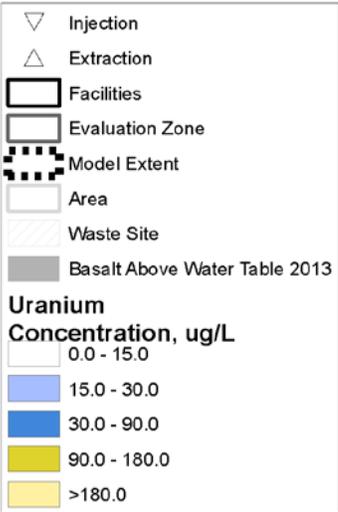
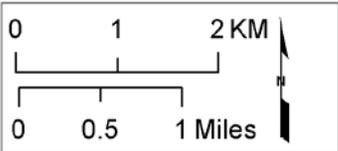
**25 Years
Uranium
Scenario 5**



P2R_FS_u238_25.png (DoubleFigure_FS.mxd)

Figure B-246 - Plan view contours of the uranium plume at simulation time 25 years based on the scenario 5 simulation.

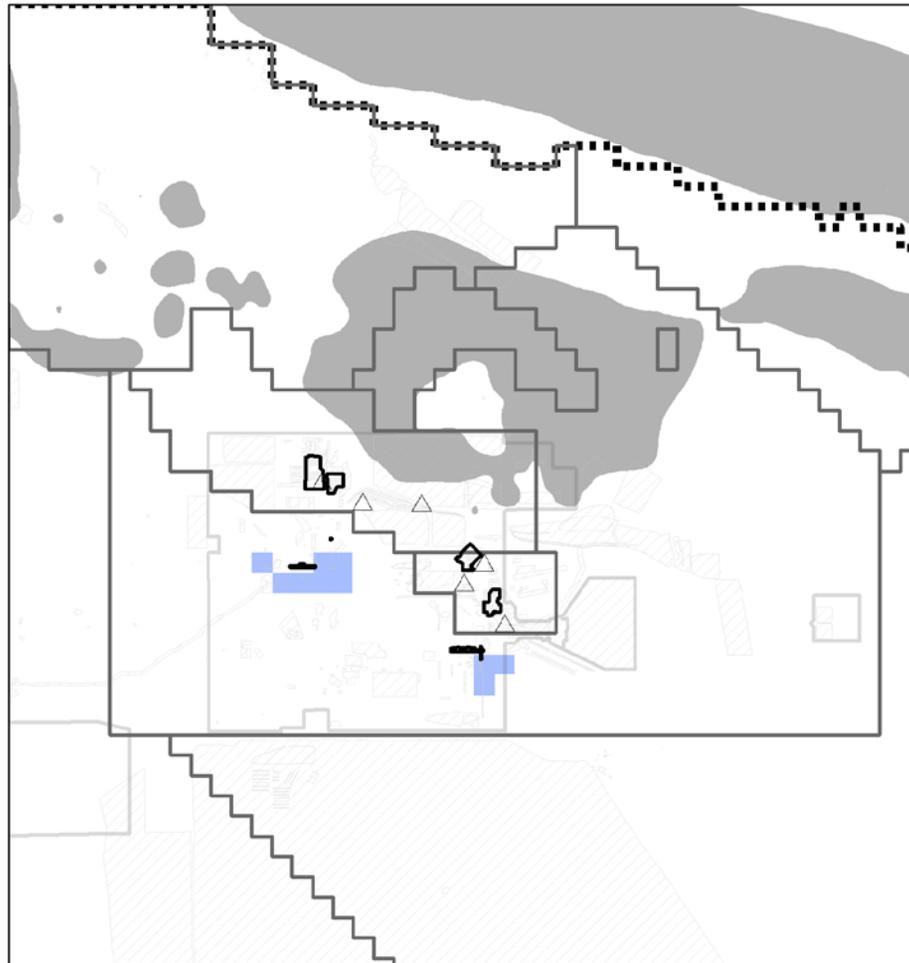
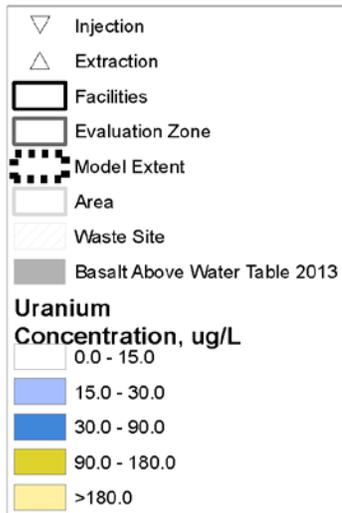
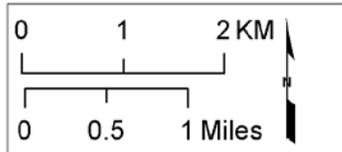
**30 Years
Uranium
Scenario 5**



P2R_FS_u238_30.png (DoubleFigure_FS.mxd)

Figure B-247 - Plan view contours of the uranium plume at simulation time 30 years based on the scenario 5 simulation.

**50 Years
Uranium
Scenario 5**



P2R_FS_u238_50.png (DoubleFigure_FS.mxd)

Figure B-248 - Plan view contours of the uranium plume at simulation time 50 years based on the scenario 5 simulation.

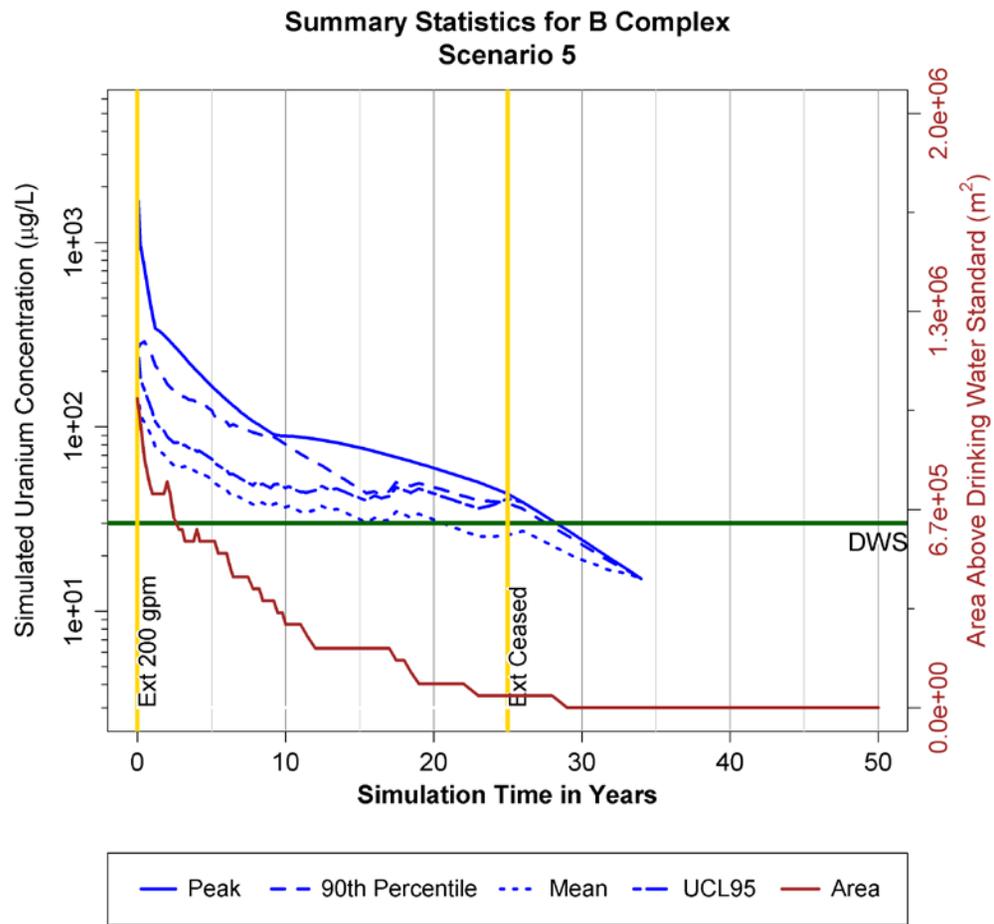


Figure B-249 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 5 simulation.

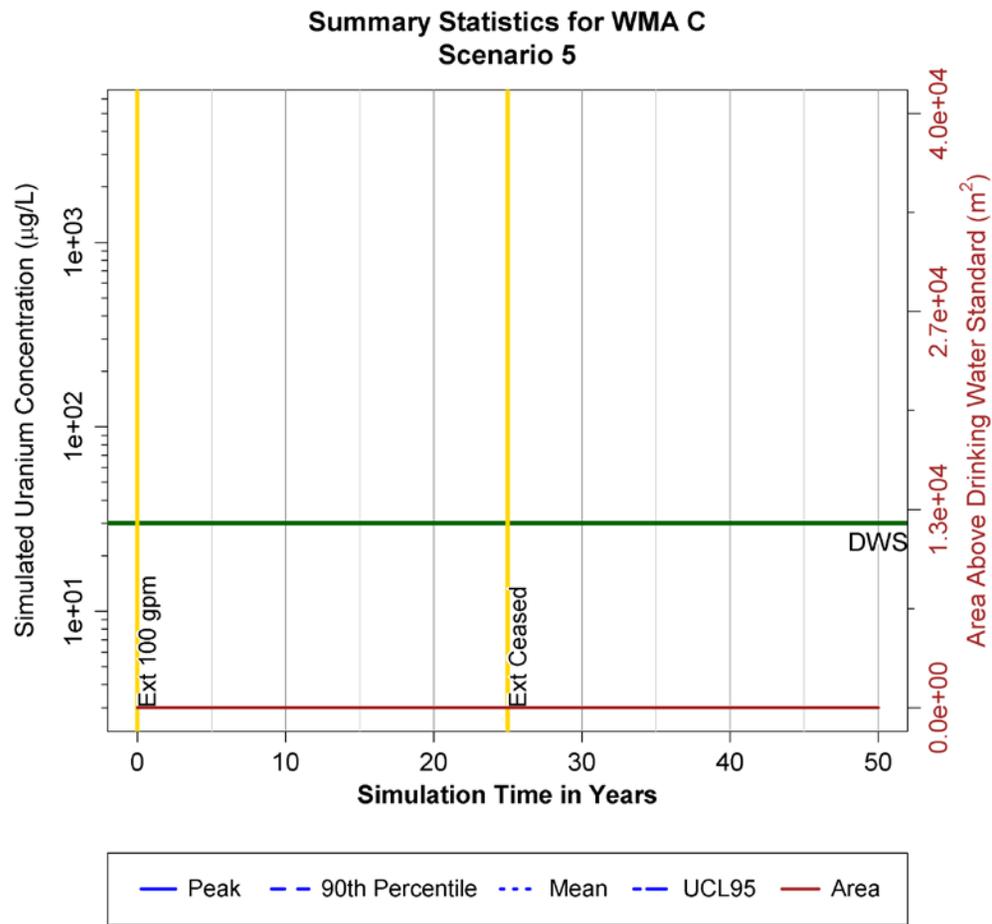


Figure B-250 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 5 simulation.

Summary Statistics for Greater 200 East
Scenario 5

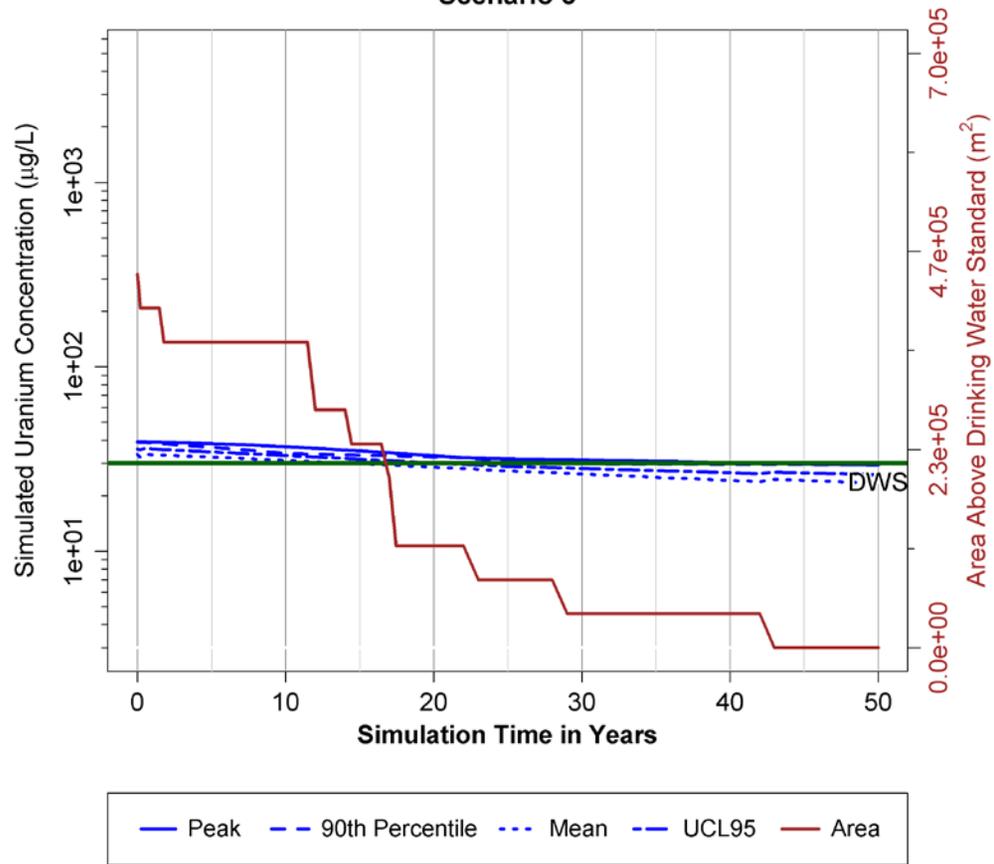


Figure B-251 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 5 simulation.

Summary Statistics for Gable Gap Area Scenario 5

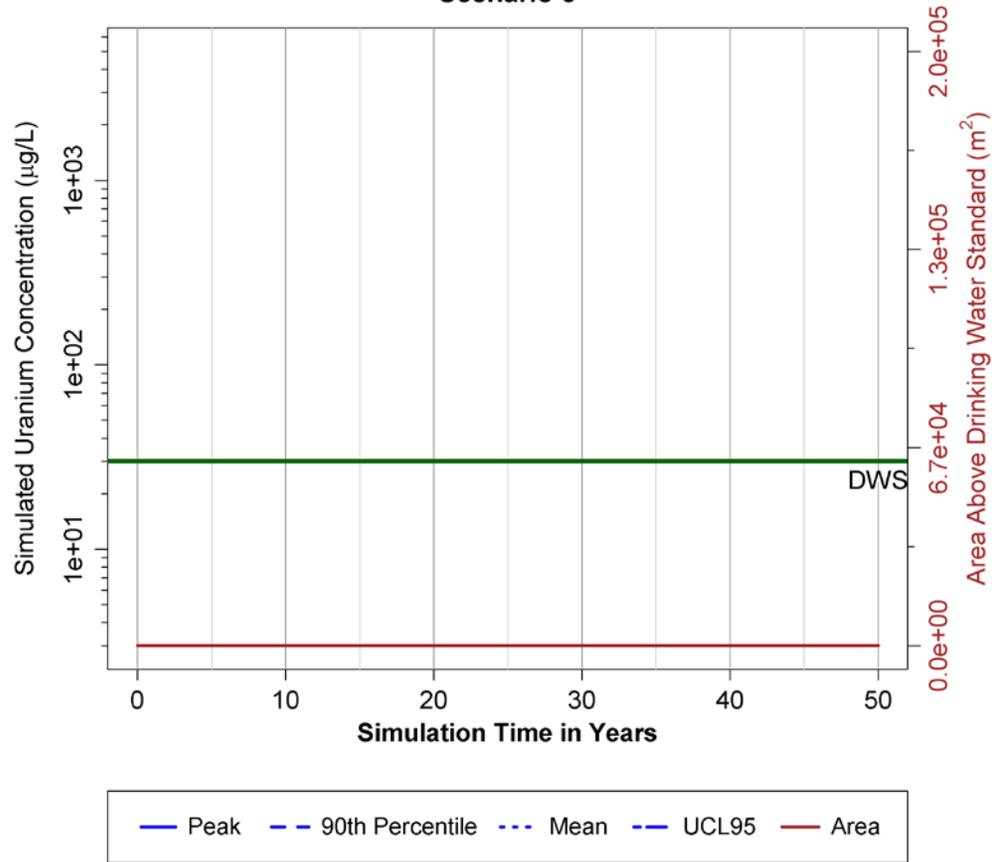
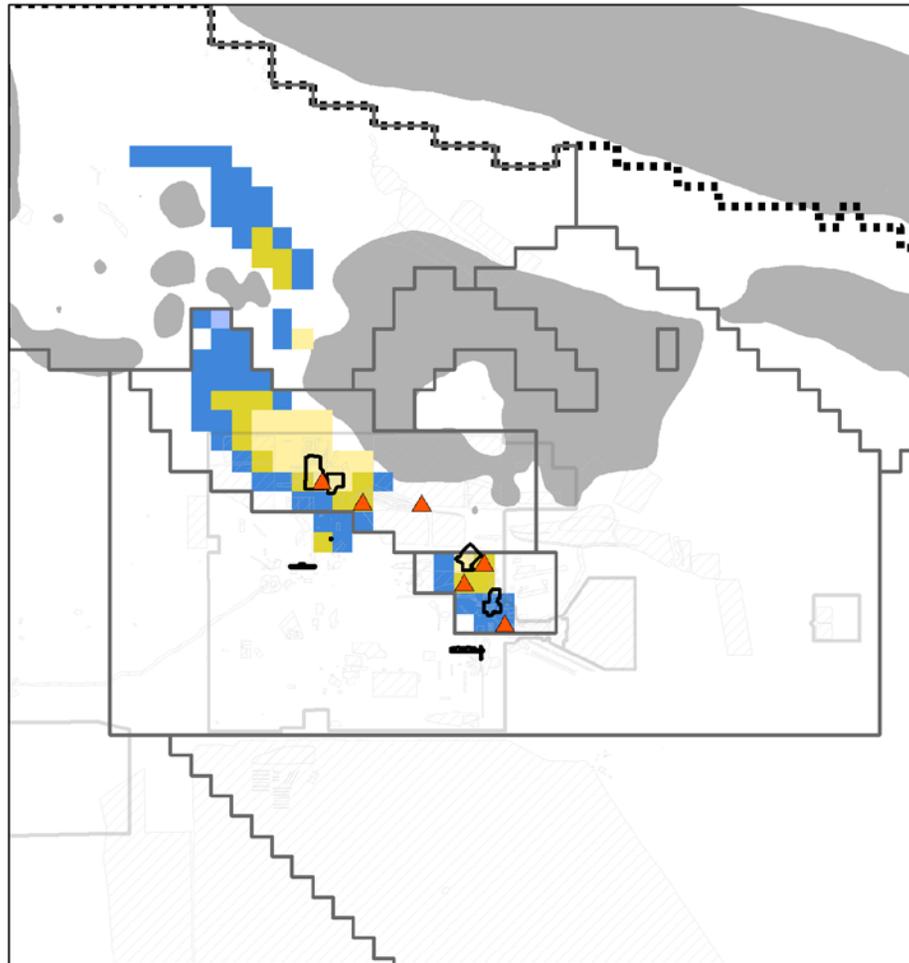
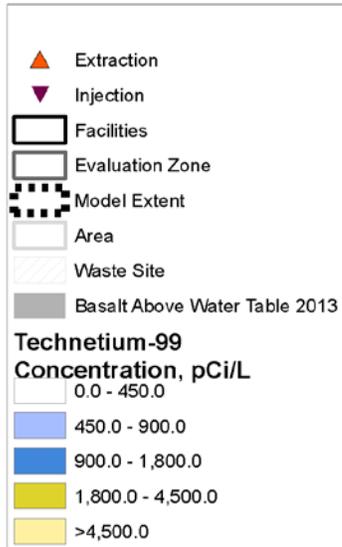
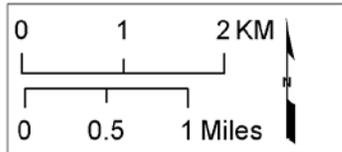


Figure B-252 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 5 simulation.

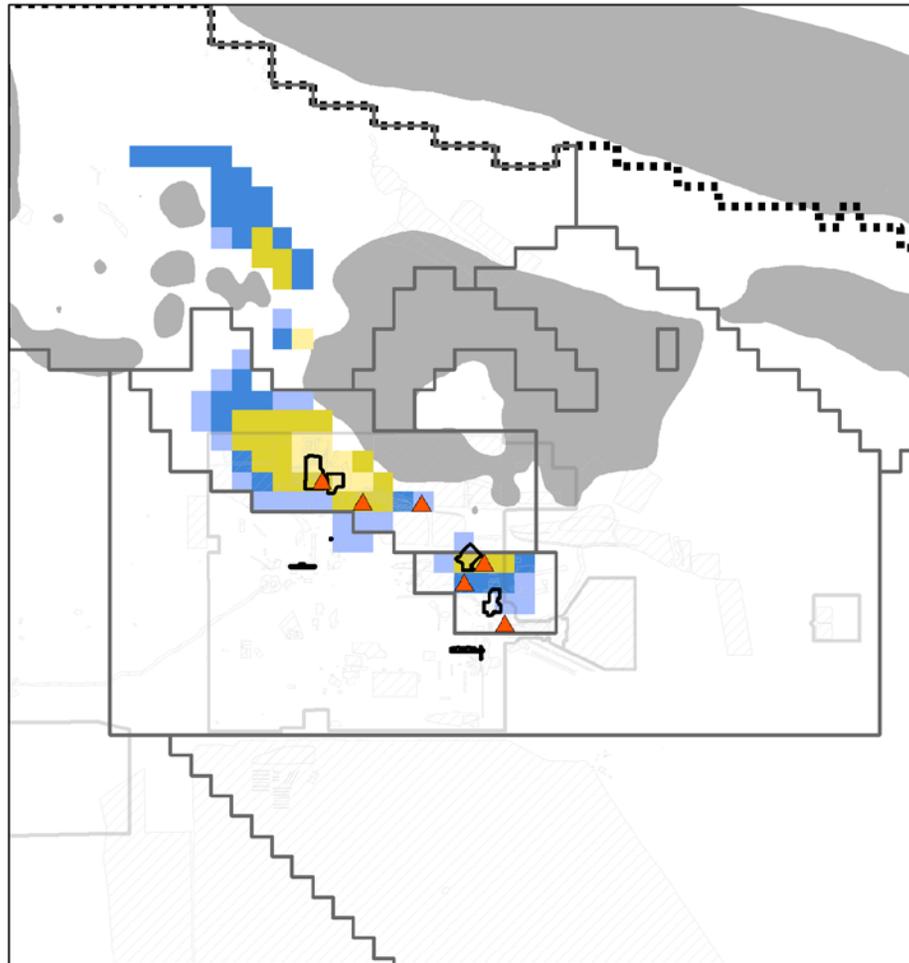
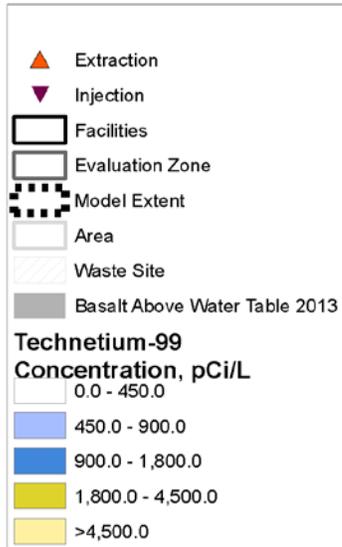
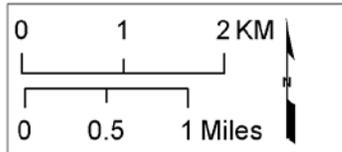
**0 Years
Technetium-99
Scenario 5
Continuing Source**



P2R_FS_tc99_0.png (DoubleFigure_FS.mxd)

Figure B-253 - Plan view contours of the technetium-99 plume at simulation time 0 years based on the scenario 5 simulation with a continuing source term.

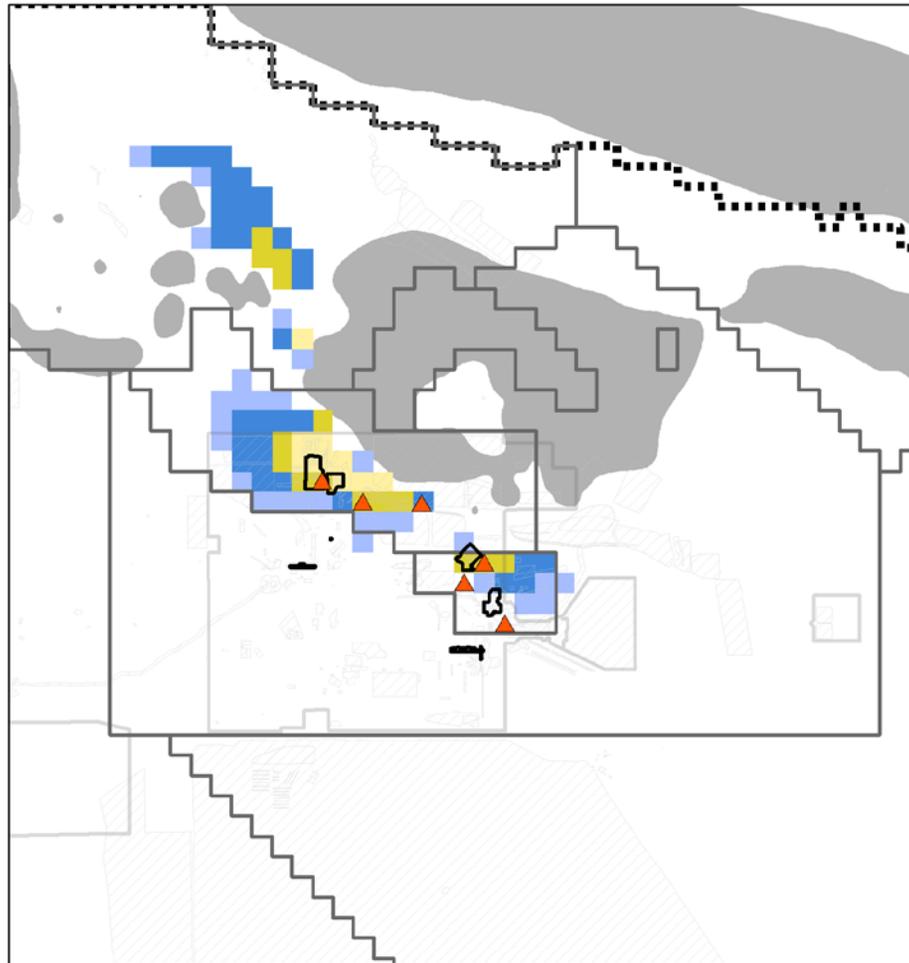
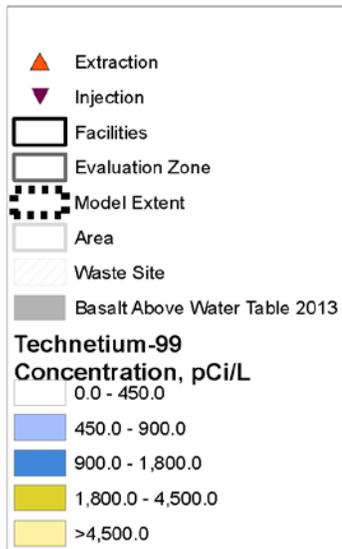
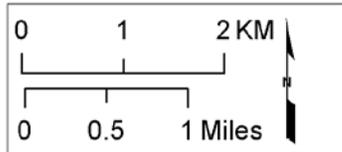
**1 Years
Technetium-99
Scenario 5
Continuing Source**



P2R_FS_tc99_1.png (DoubleFigure_FS.mxd)

Figure B-254 - Plan view contours of the technetium-99 plume at simulation time 1 years based on the scenario 5 simulation with a continuing source term.

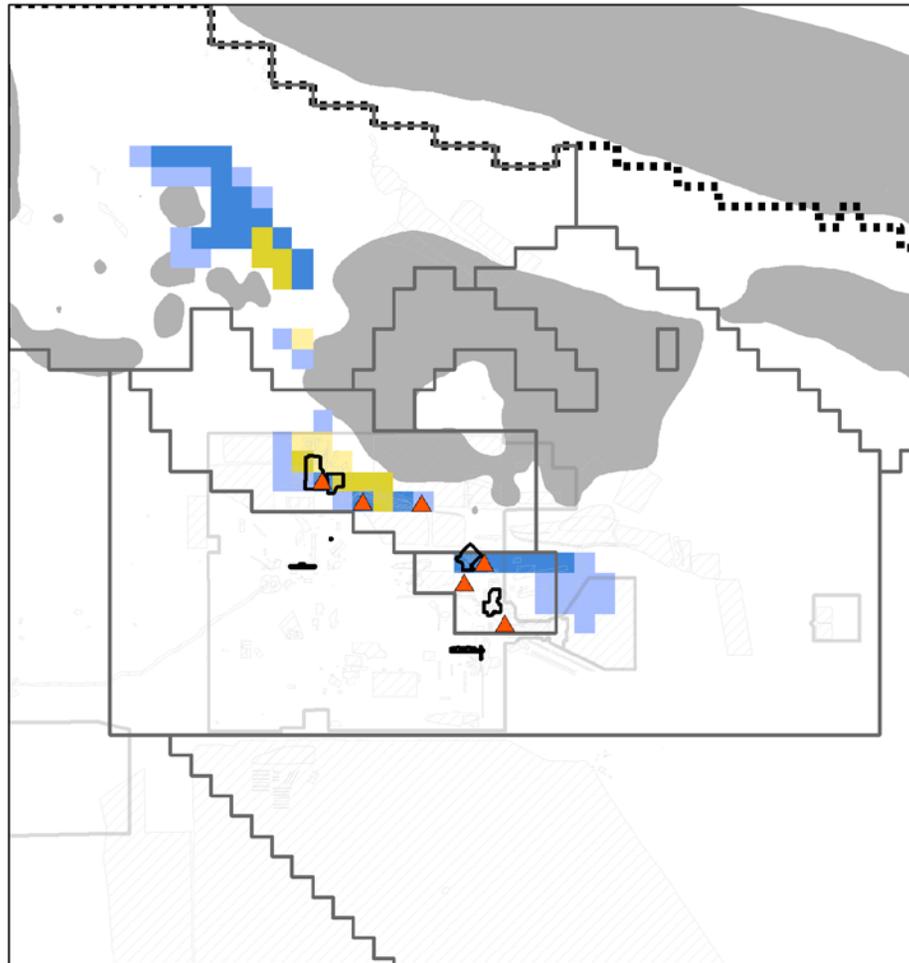
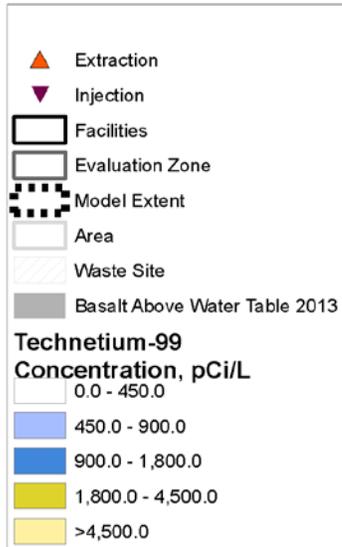
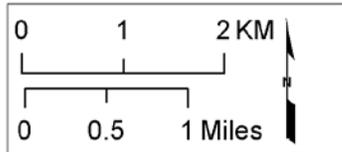
**2 Years
Technetium-99
Scenario 5
Continuing Source**



P2R_FS_tc99_2.png (DoubleFigure_FS.mxd)

Figure B-255 - Plan view contours of the technetium-99 plume at simulation time 2 years based on the scenario 5 simulation with a continuing source term.

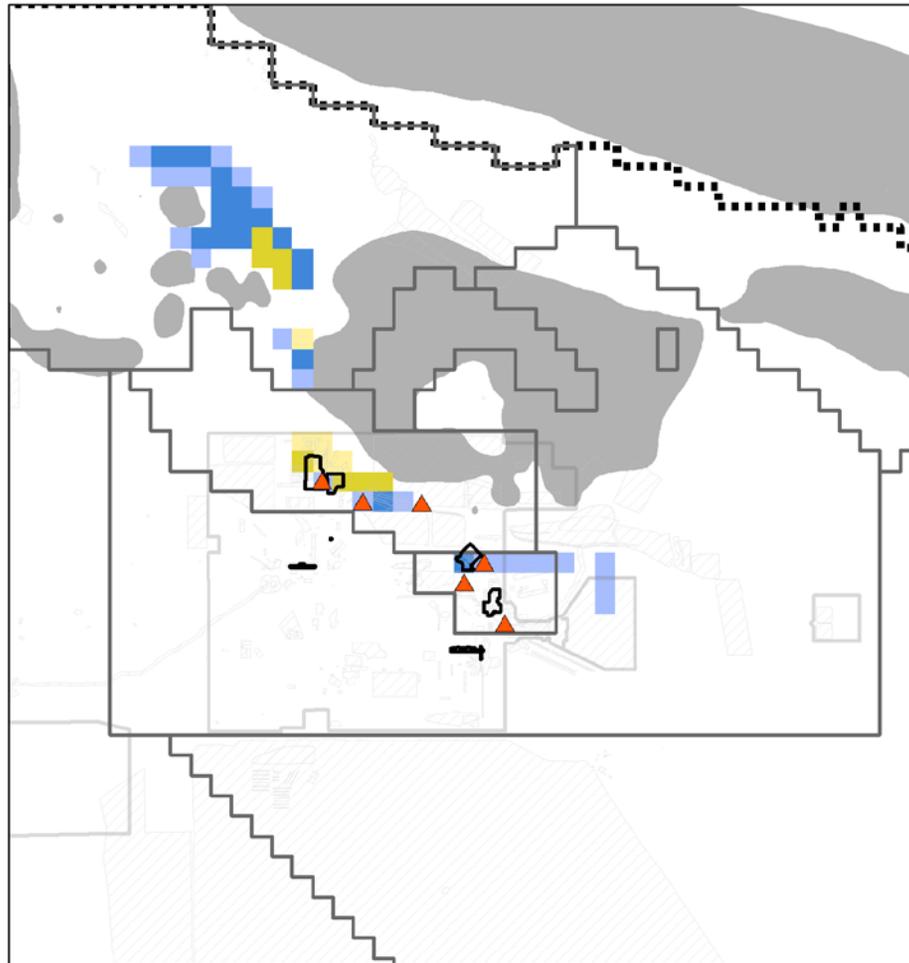
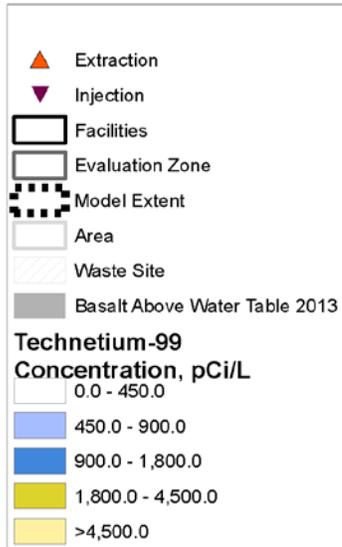
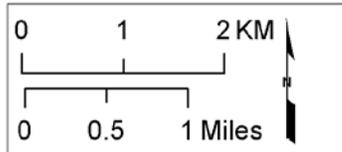
**5 Years
Technetium-99
Scenario 5
Continuing Source**



P2R_FS_tc99_5.png (DoubleFigure_FS.mxd)

Figure B-256 - Plan view contours of the technetium-99 plume at simulation time 5 years based on the scenario 5 simulation with a continuing source term.

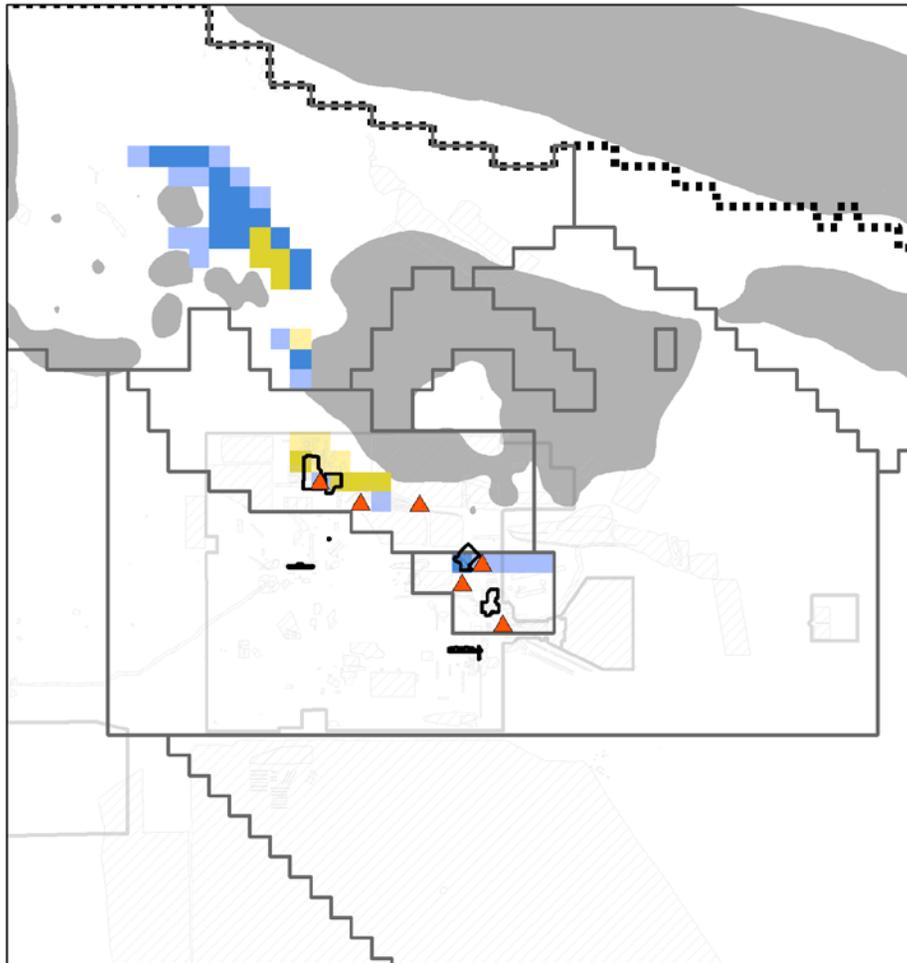
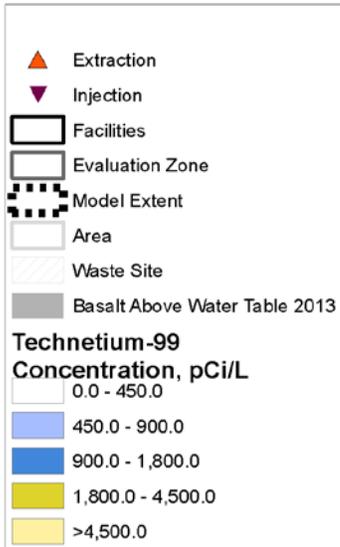
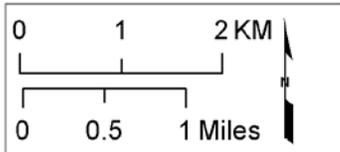
**10 Years
Technetium-99
Scenario 5
Continuing Source**



P2R_FS_tc99_10.png (DoubleFigure_FS.mxd)

Figure B-257 - Plan view contours of the technetium-99 plume at simulation time 10 years based on the scenario 5 simulation with a continuing source term.

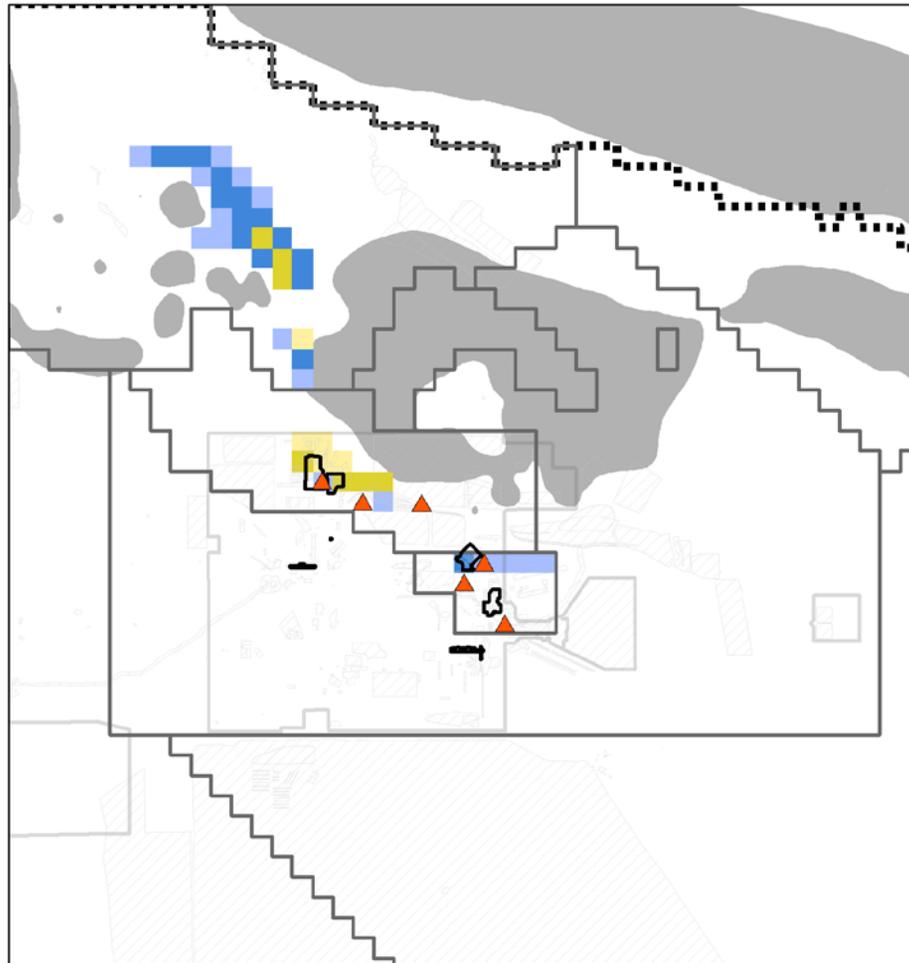
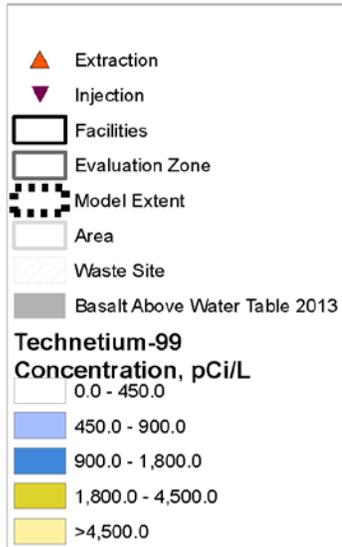
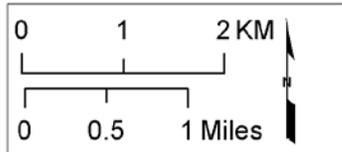
**15 Years
Technetium-99
Scenario 5
Continuing Source**



P2R_FS_tc99_15.png (DoubleFigure_FS.mxd)

Figure B-258 - Plan view contours of the technetium-99 plume at simulation time 15 years based on the scenario 5 simulation with a continuing source term.

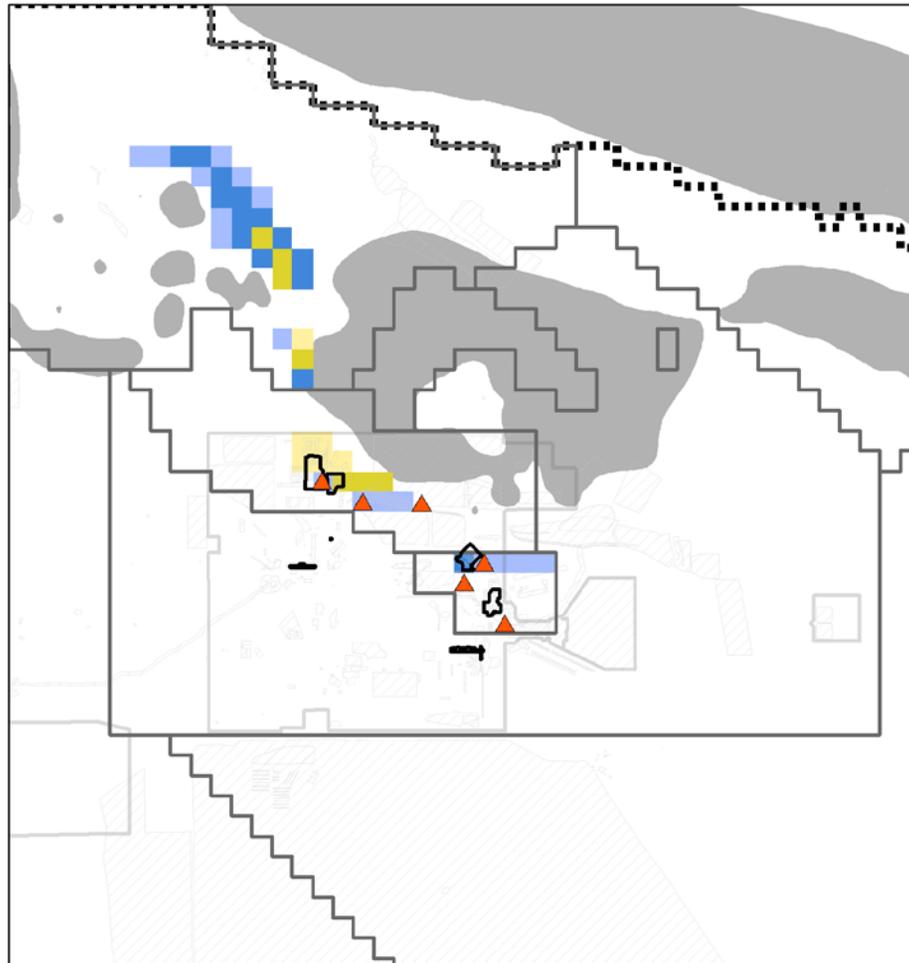
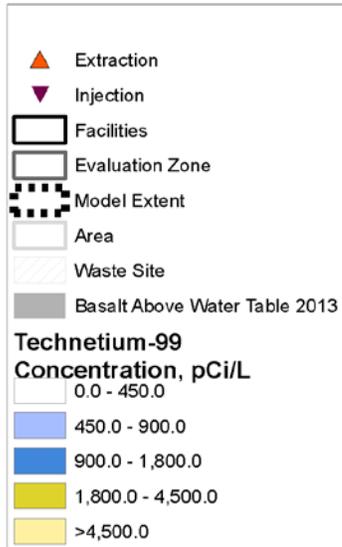
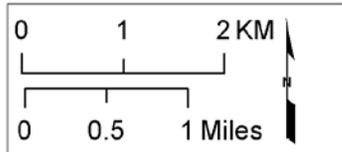
**20 Years
Technetium-99
Scenario 5
Continuing Source**



P2R_FS_tc99_20.png (DoubleFigure_FS.mxd)

Figure B-259 - Plan view contours of the technetium-99 plume at simulation time 20 years based on the scenario 5 simulation with a continuing source term.

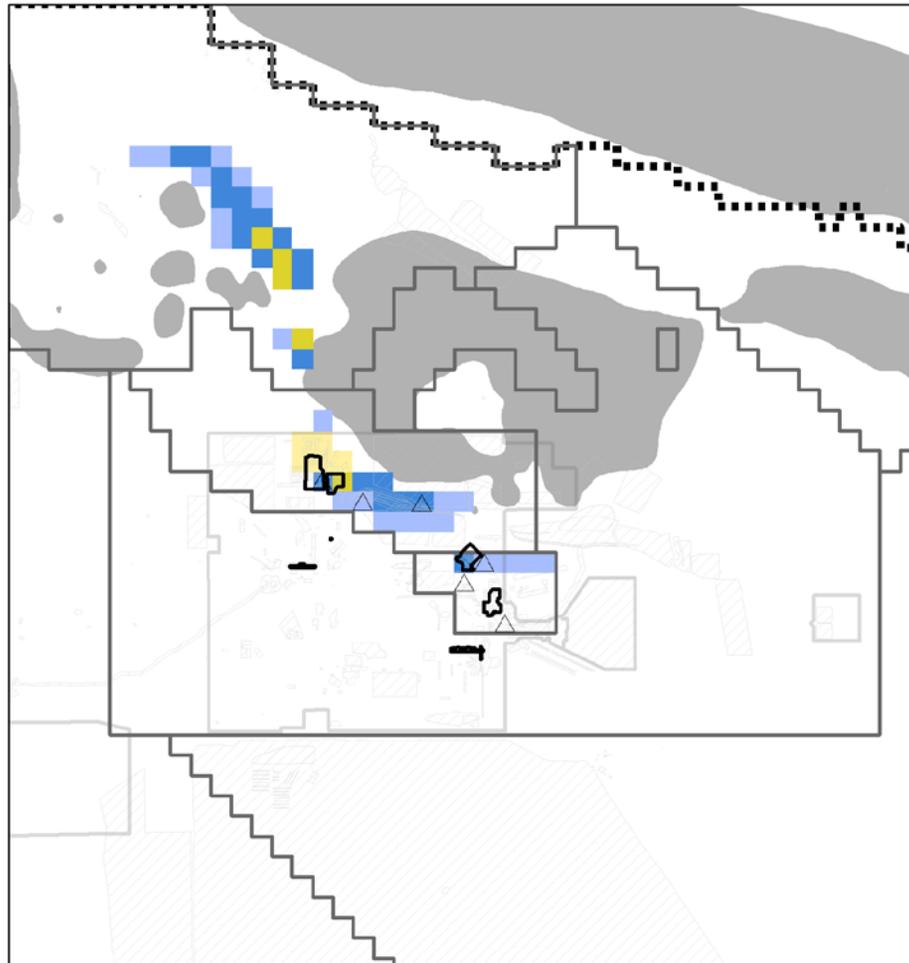
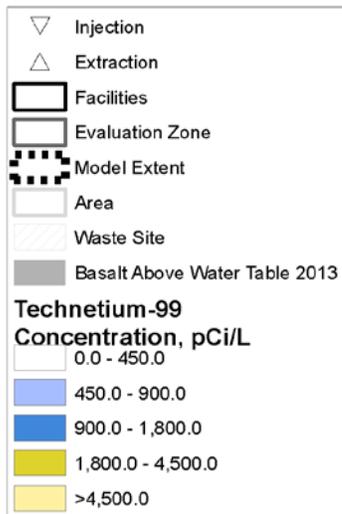
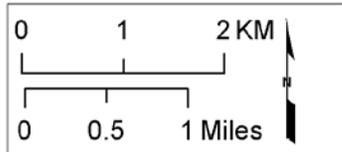
**25 Years
Technetium-99
Scenario 5
Continuing Source**



P2R_FS_tc99_25.png (DoubleFigure_FS.mxd)

Figure B-260 - Plan view contours of the technetium-99 plume at simulation time 25 years based on the scenario 5 simulation with a continuing source term.

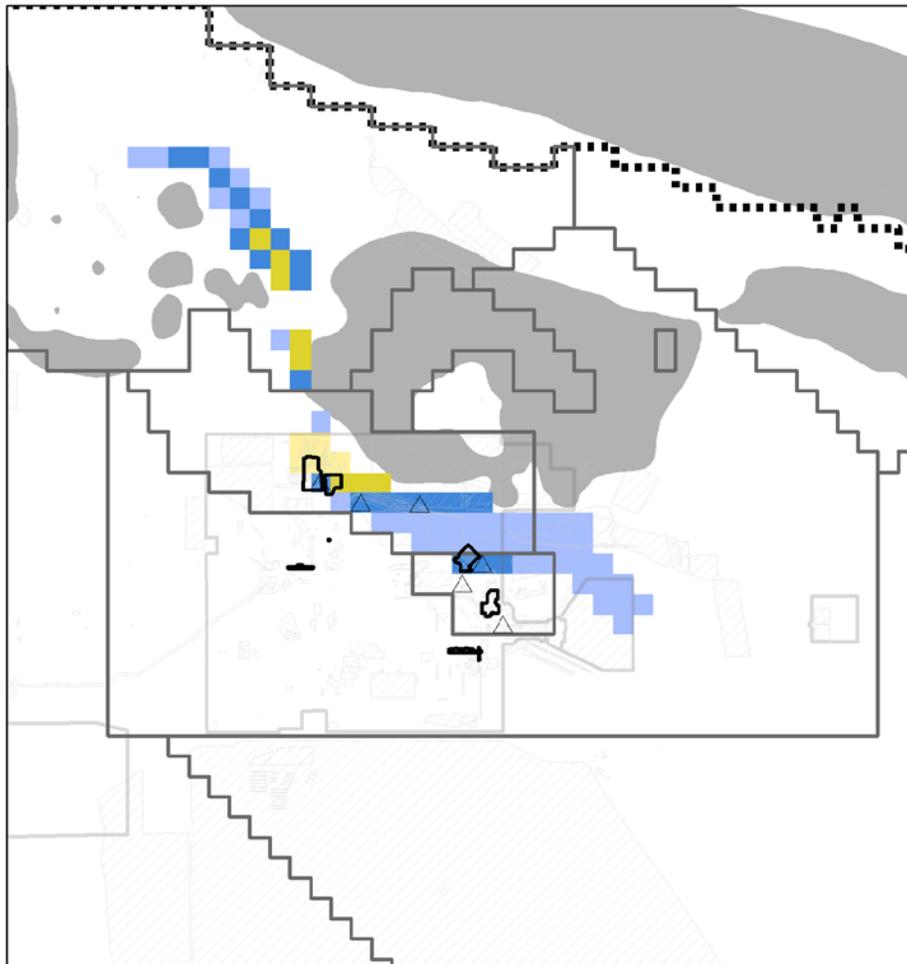
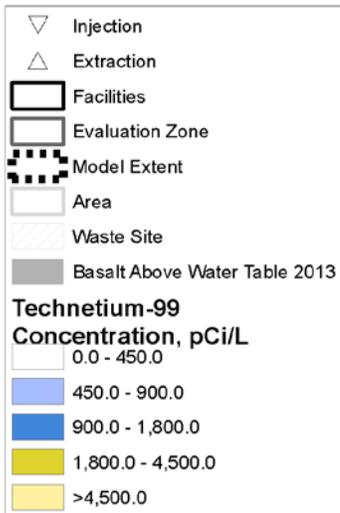
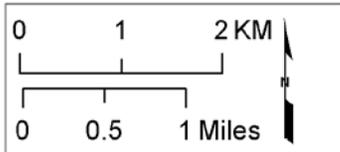
**30 Years
Technetium-99
Scenario 5
Continuing Source**



P2R_FS_tc99_30.png (DoubleFigure_FS.mxd)

Figure B-261 - Plan view contours of the technetium-99 plume at simulation time 30 years based on the scenario 5 simulation with a continuing source term.

**50 Years
Technetium-99
Scenario 5
Continuing Source**



P2R_FS_tc99_50.png (DoubleFigure_FS.mxd)

Figure B-262 - Plan view contours of the technetium-99 plume at simulation time 50 years based on the scenario 5 simulation with a continuing source term.

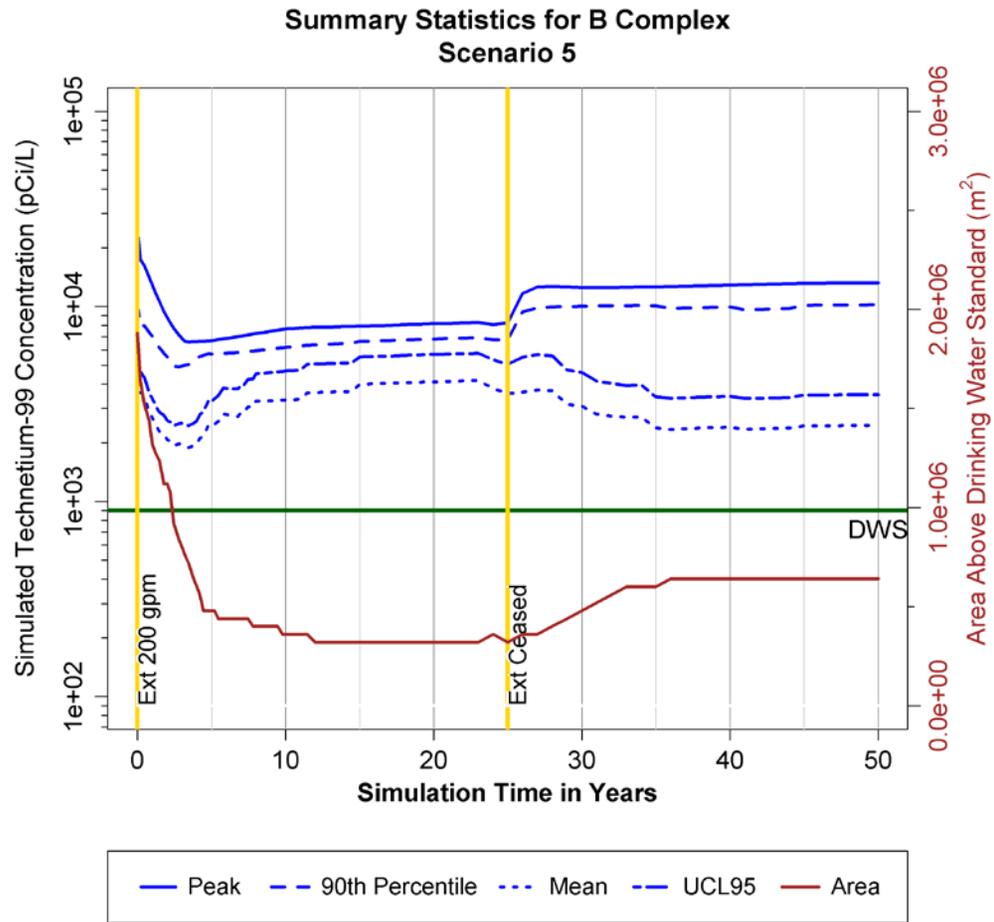


Figure B-263 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 5 simulation with a continuing source term.

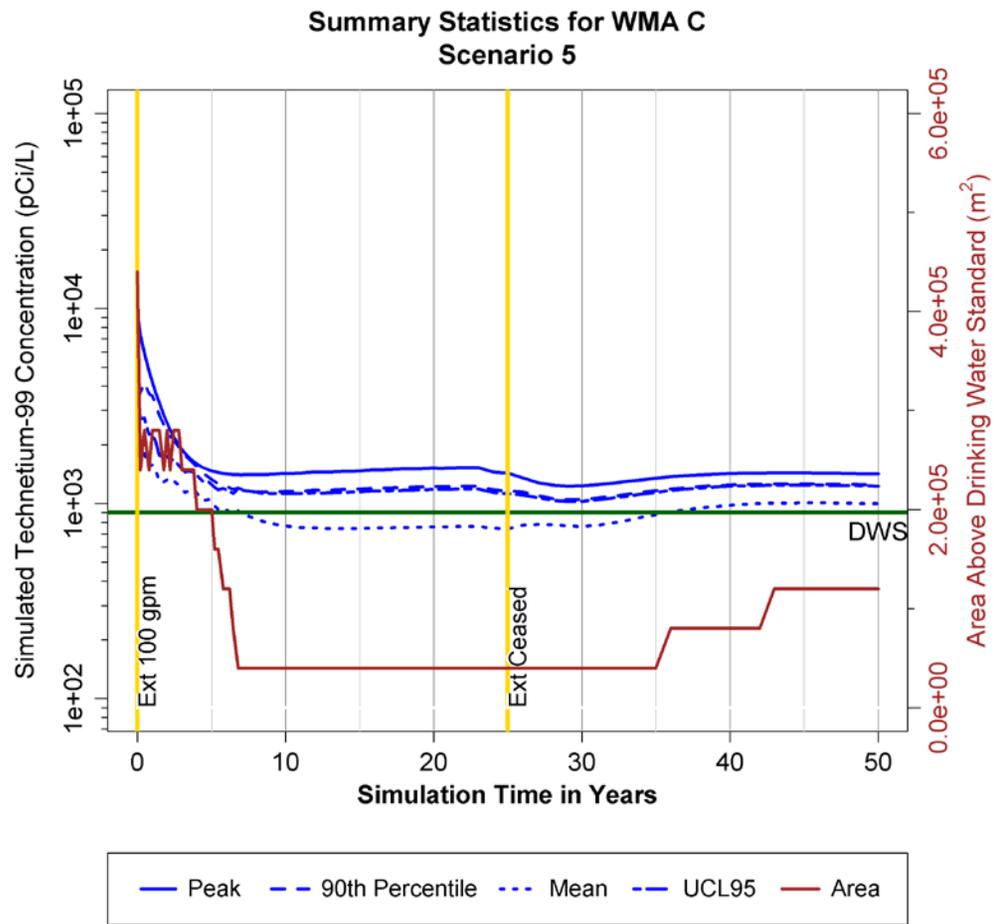


Figure B-264 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 5 simulation with a continuing source term.

Summary Statistics for Greater 200 East
Scenario 5

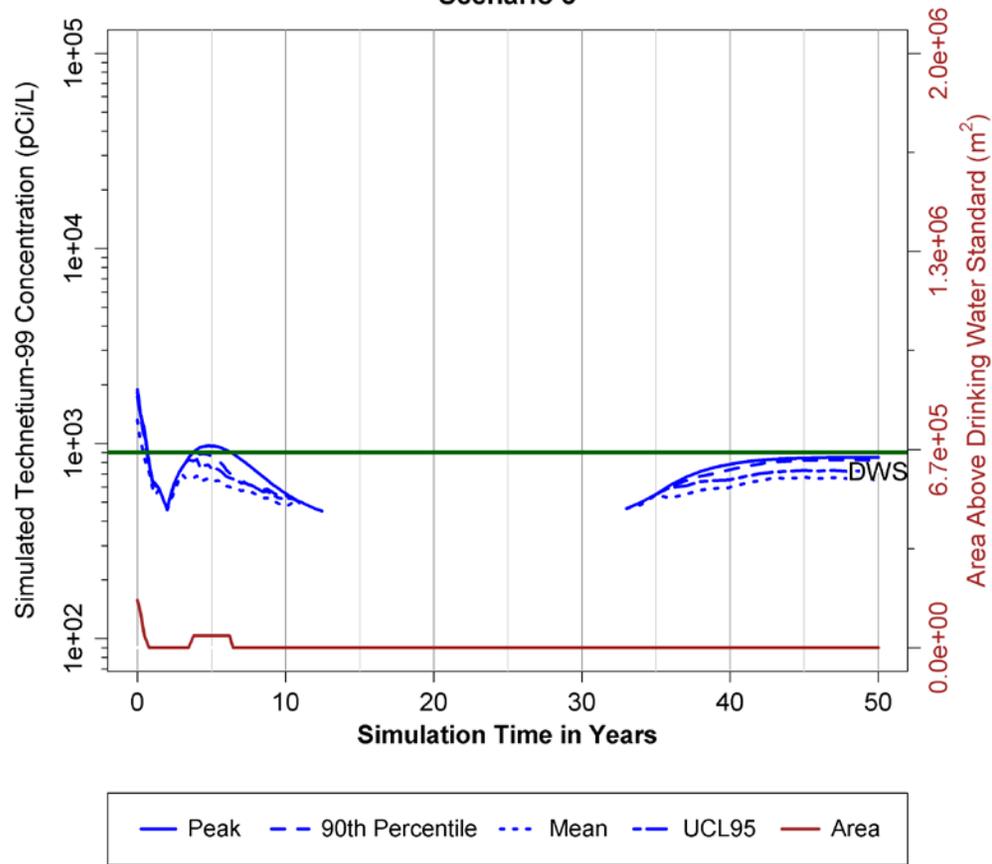


Figure B-265 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 5 simulation with a continuing source term.

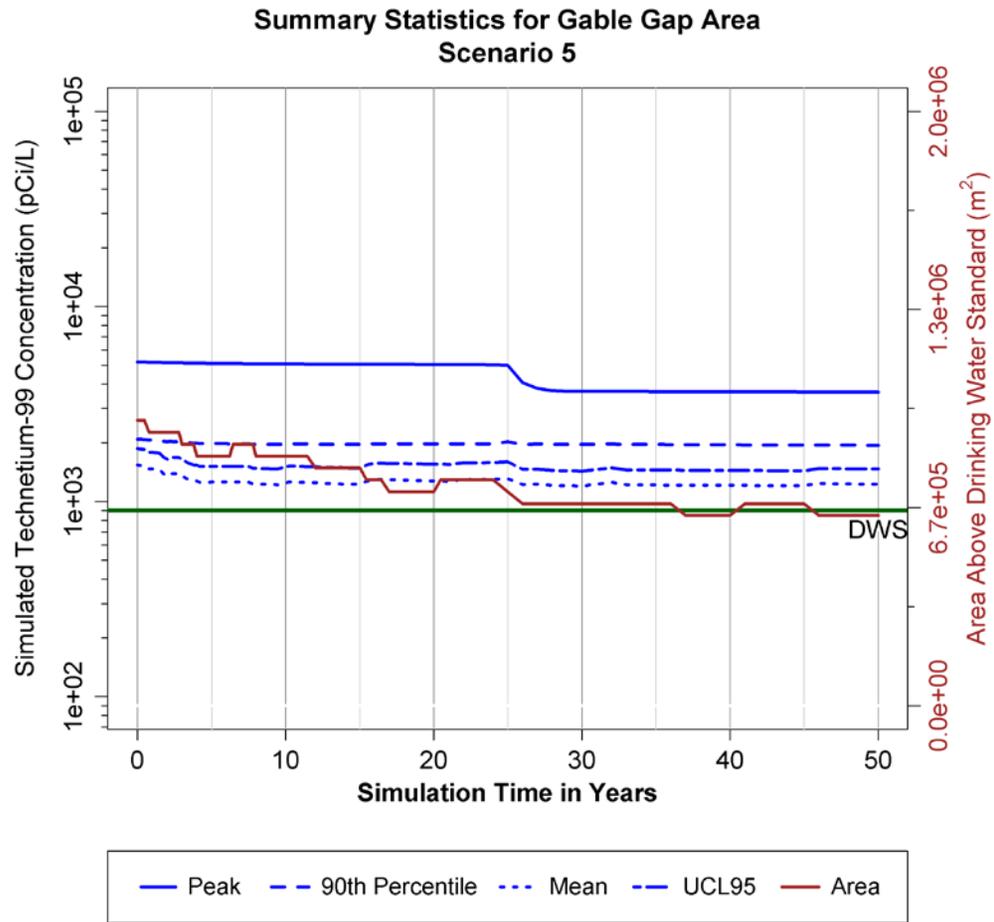
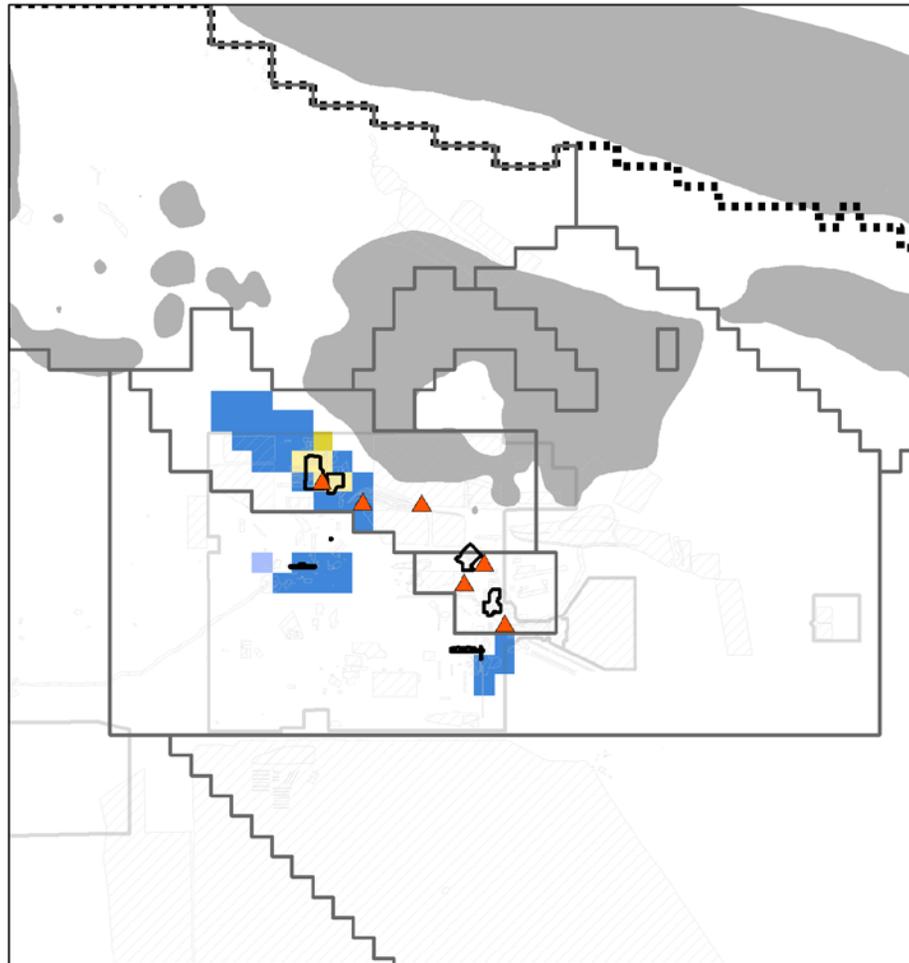
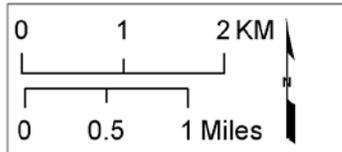


Figure B-266 - Statistical summary of simulated concentration within the model domain for the technetium-99 plume for the scenario 5 simulation with a continuing source term.

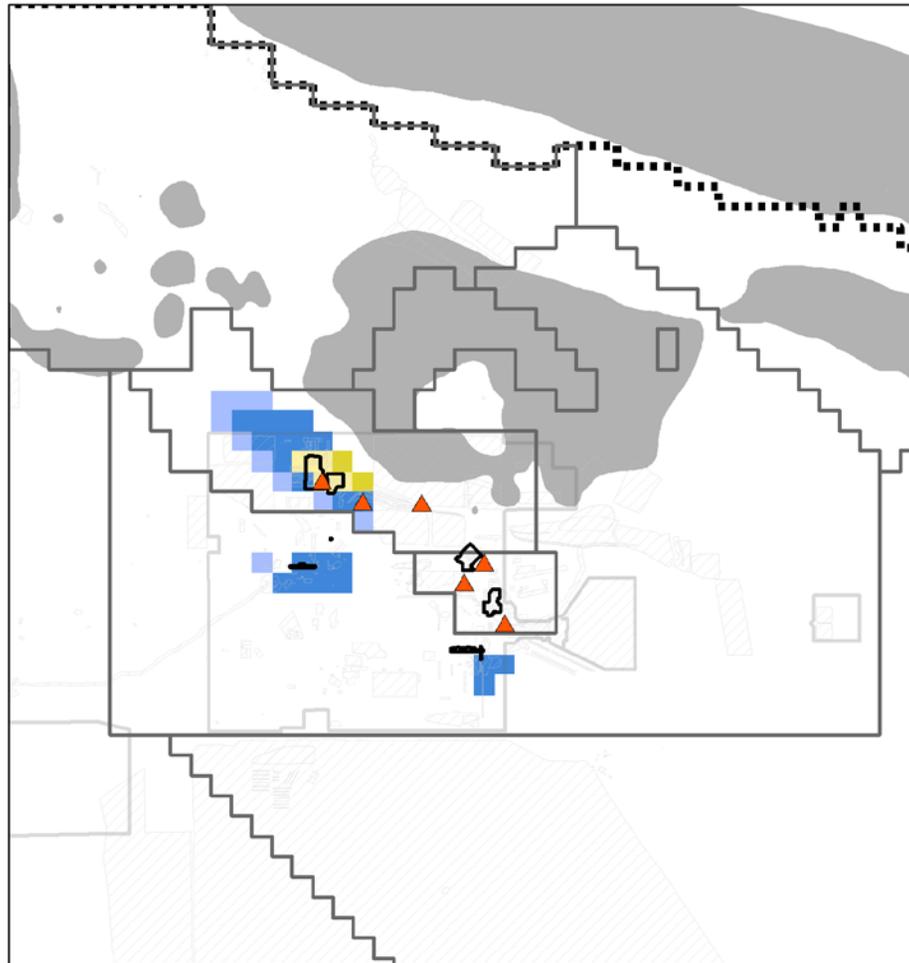
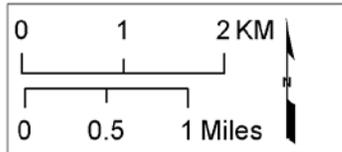
**0 Years
Uranium
Scenario 5
Continuing Source**



P2R_FS_u238_0.png (DoubleFigure_FS.mxd)

Figure B-267 - Plan view contours of the uranium plume at simulation time 0 years based on the scenario 5 simulation with a continuing source term.

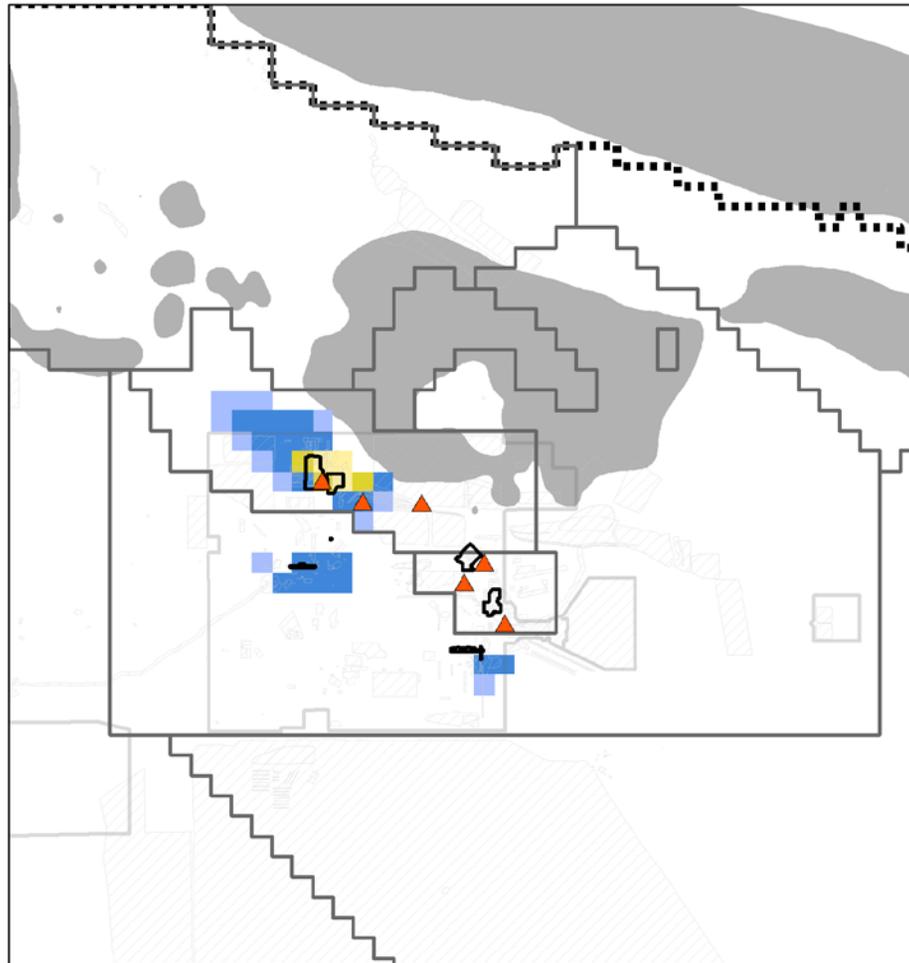
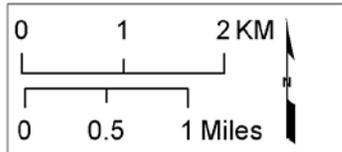
**1 Years
Uranium
Scenario 5
Continuing Source**



P2R_FS_u238_1.png (DoubleFigure_FS.mxd)

Figure B-268 - Plan view contours of the uranium plume at simulation time 1 years based on the scenario 5 simulation with a continuing source term.

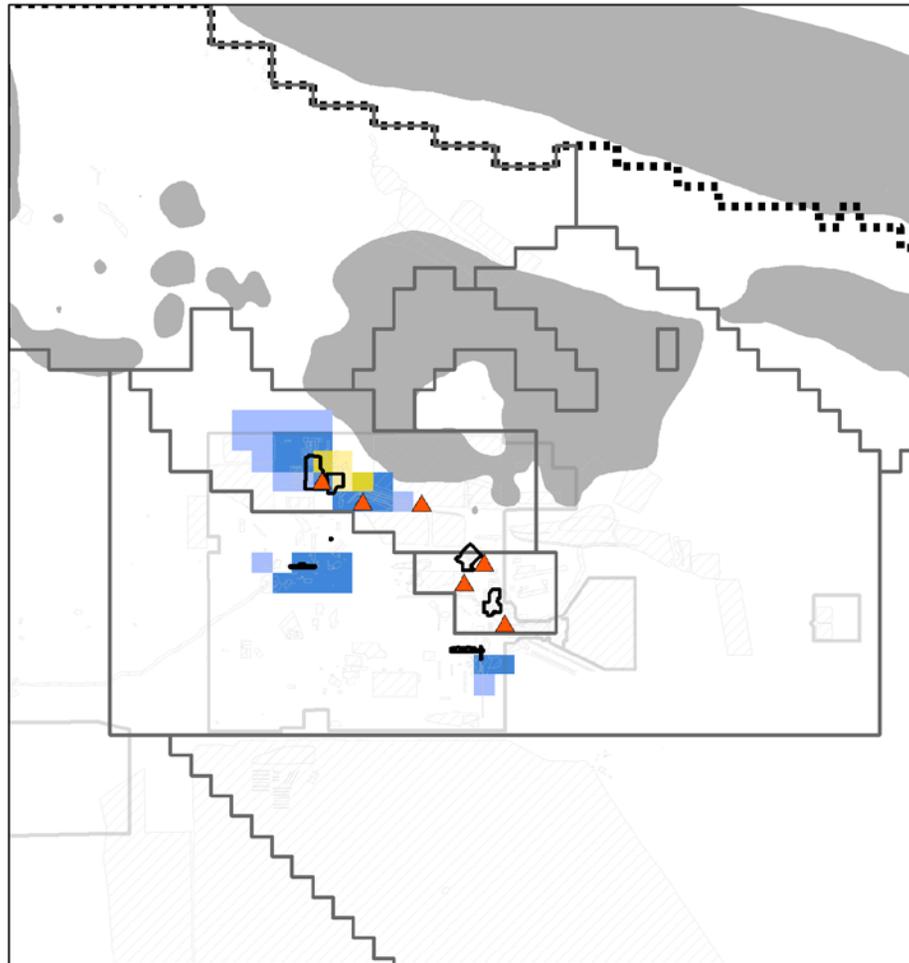
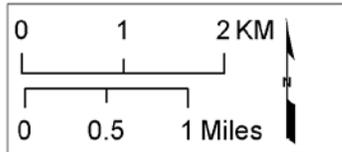
**2 Years
Uranium
Scenario 5
Continuing Source**



P2R_FS_u238_2.png (DoubleFigure_FS.mxd)

Figure B-269 - Plan view contours of the uranium plume at simulation time 2 years based on the scenario 5 simulation with a continuing source term.

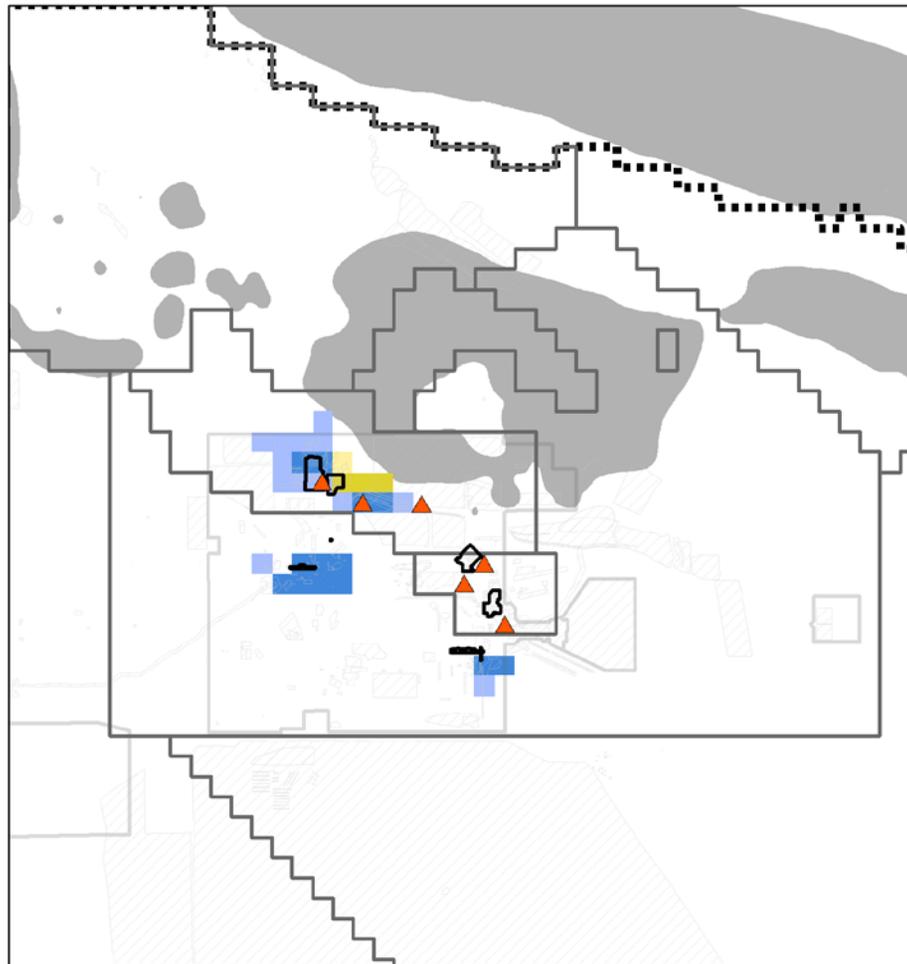
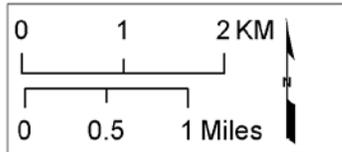
**5 Years
Uranium
Scenario 5
Continuing Source**



P2R_FS_u238_5.png (DoubleFigure_FS.mxd)

Figure B-270 - Plan view contours of the uranium plume at simulation time 5 years based on the scenario 5 simulation with a continuing source term.

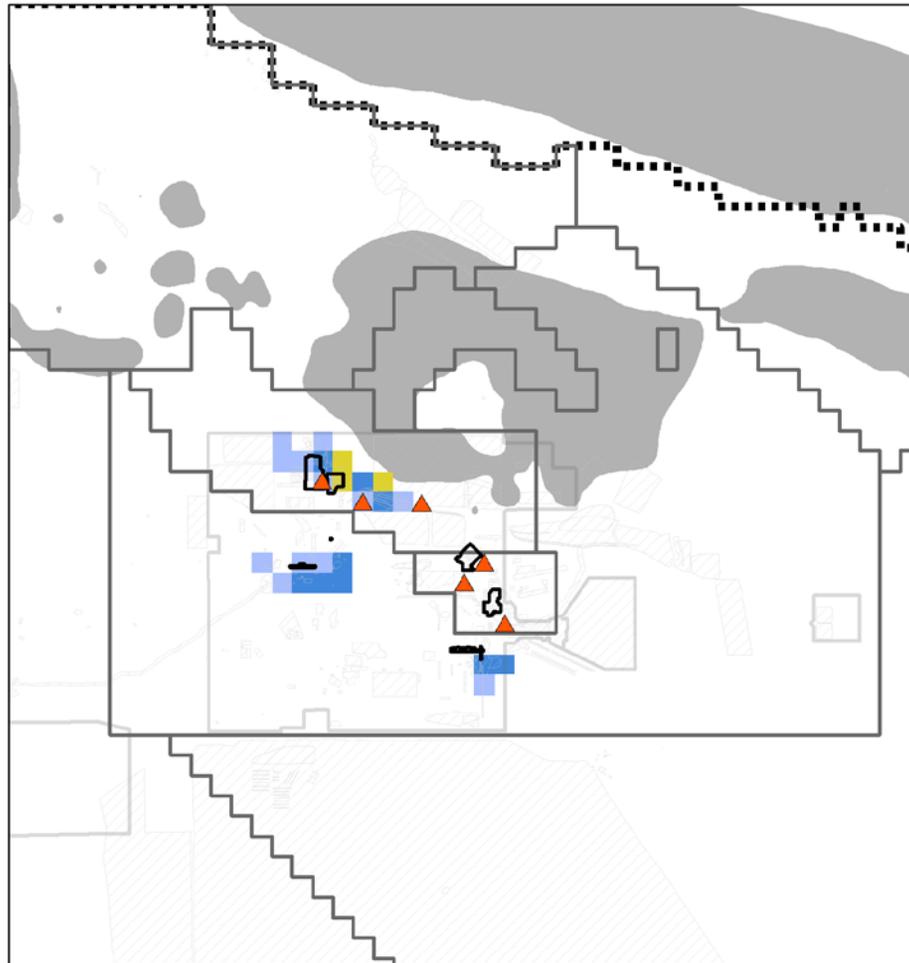
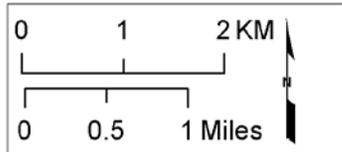
**10 Years
Uranium
Scenario 5
Continuing Source**



P2R_FS_u238_10.png (DoubleFigure_FS.mxd)

Figure B-271 - Plan view contours of the uranium plume at simulation time 10 years based on the scenario 5 simulation with a continuing source term.

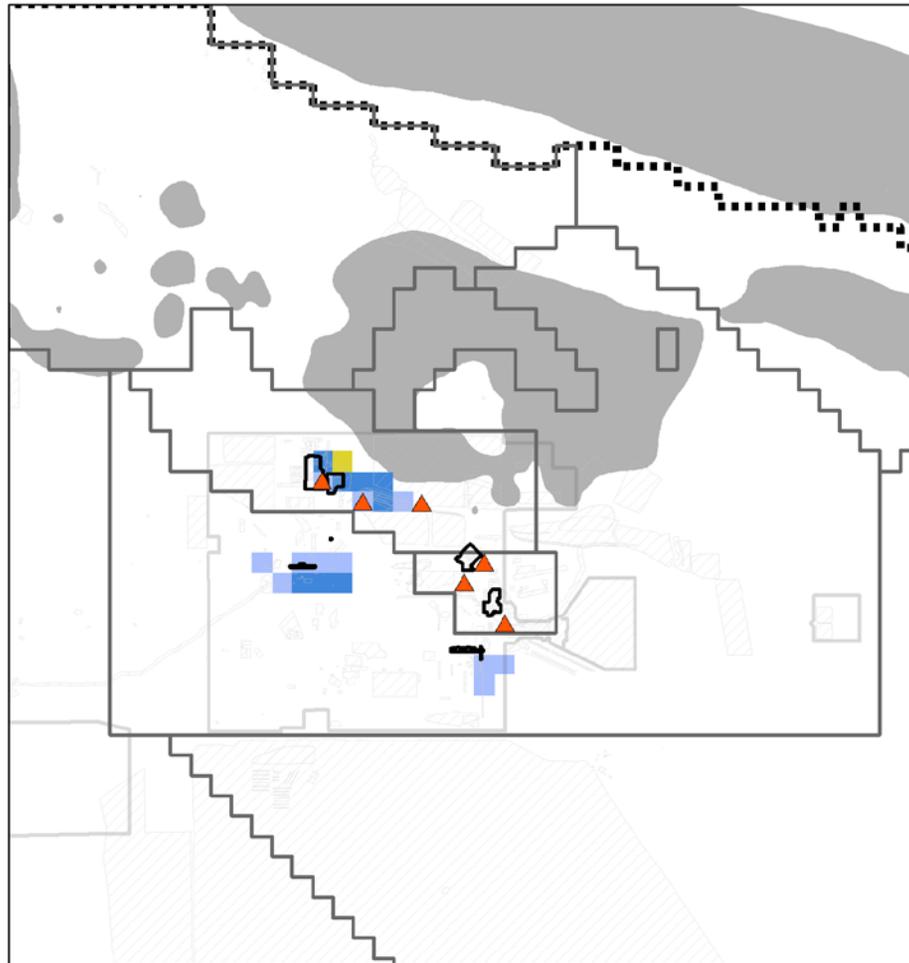
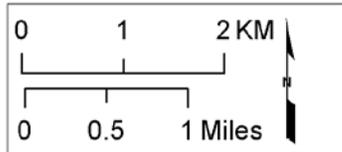
**15 Years
Uranium
Scenario 5
Continuing Source**



P2R_FS_u238_15.png (DoubleFigure_FS.mxd)

Figure B-272 - Plan view contours of the uranium plume at simulation time 15 years based on the scenario 5 simulation with a continuing source term.

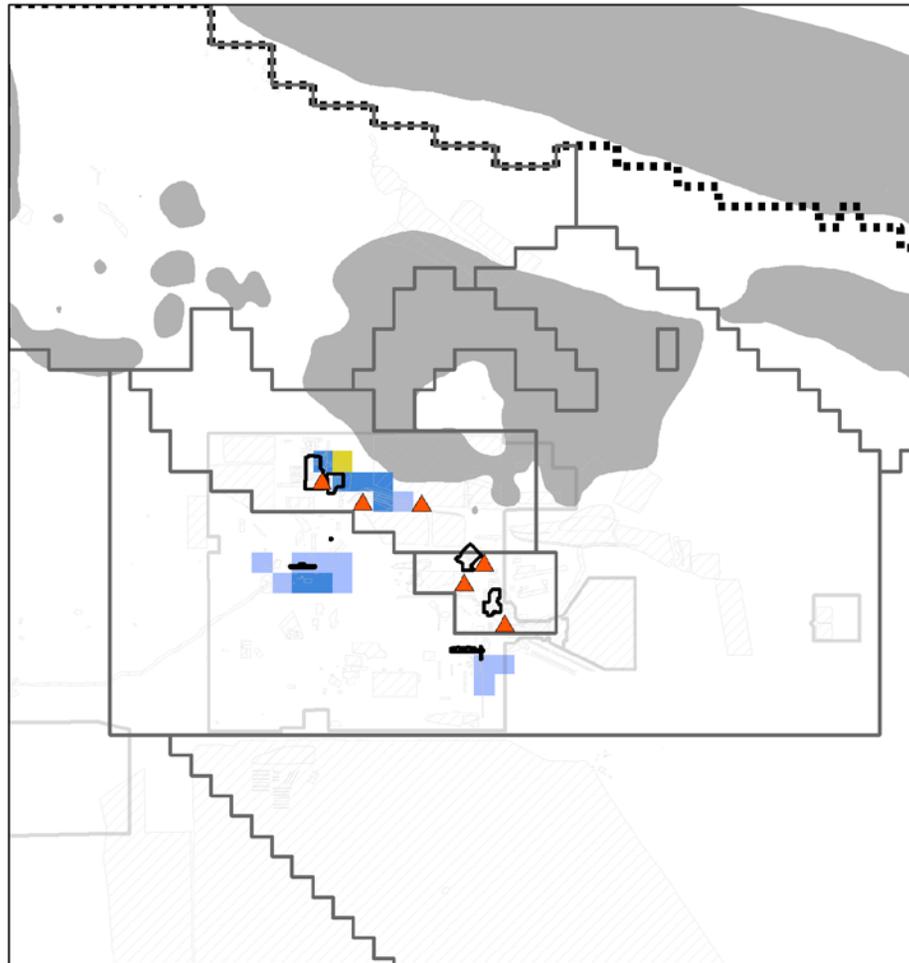
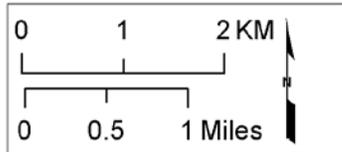
**20 Years
Uranium
Scenario 5
Continuing Source**



P2R_FS_u238_20.png (DoubleFigure_FS.mxd)

Figure B-273 - Plan view contours of the uranium plume at simulation time 20 years based on the scenario 5 simulation with a continuing source term.

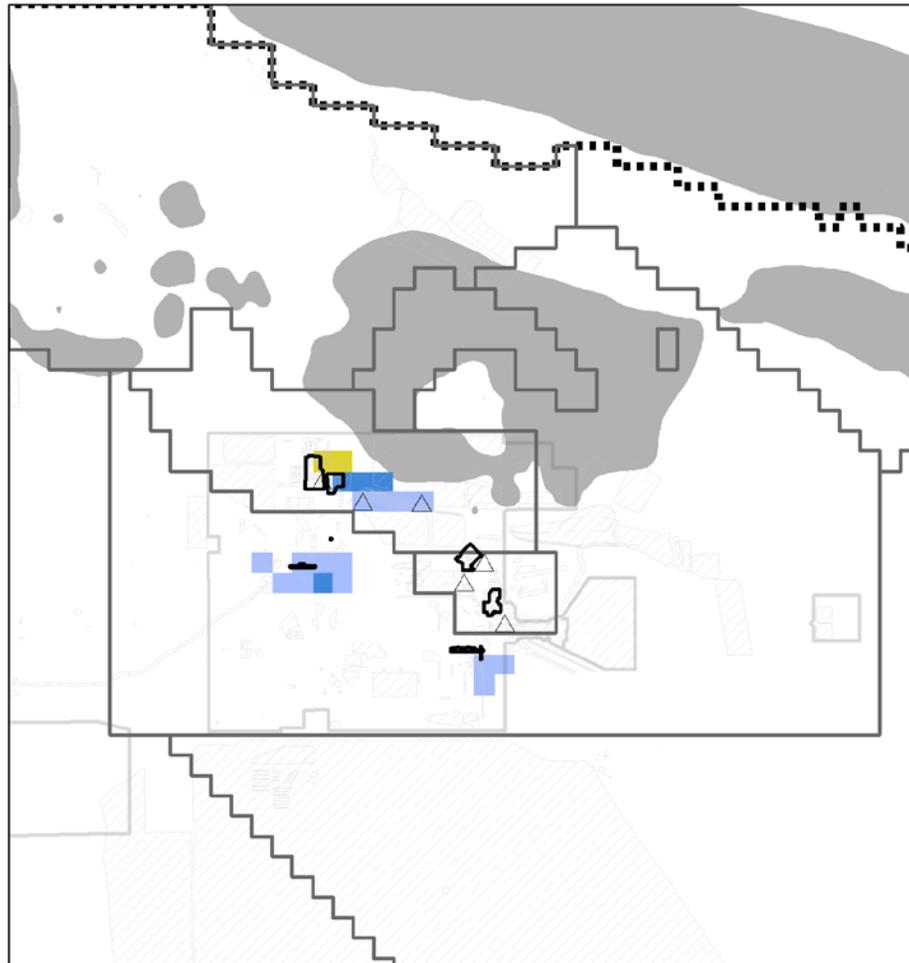
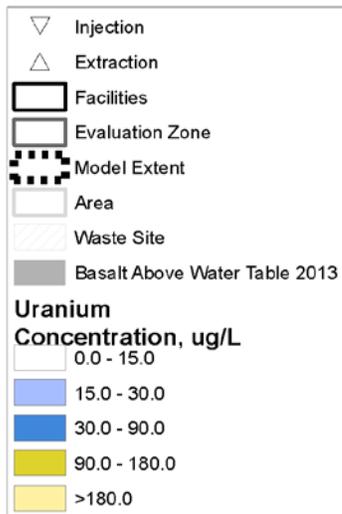
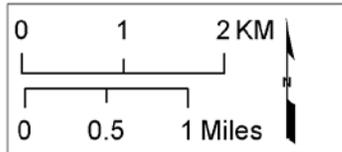
**25 Years
Uranium
Scenario 5
Continuing Source**



P2R_FS_u238_25.png (DoubleFigure_FS.mxd)

Figure B-274 - Plan view contours of the uranium plume at simulation time 25 years based on the scenario 5 simulation with a continuing source term.

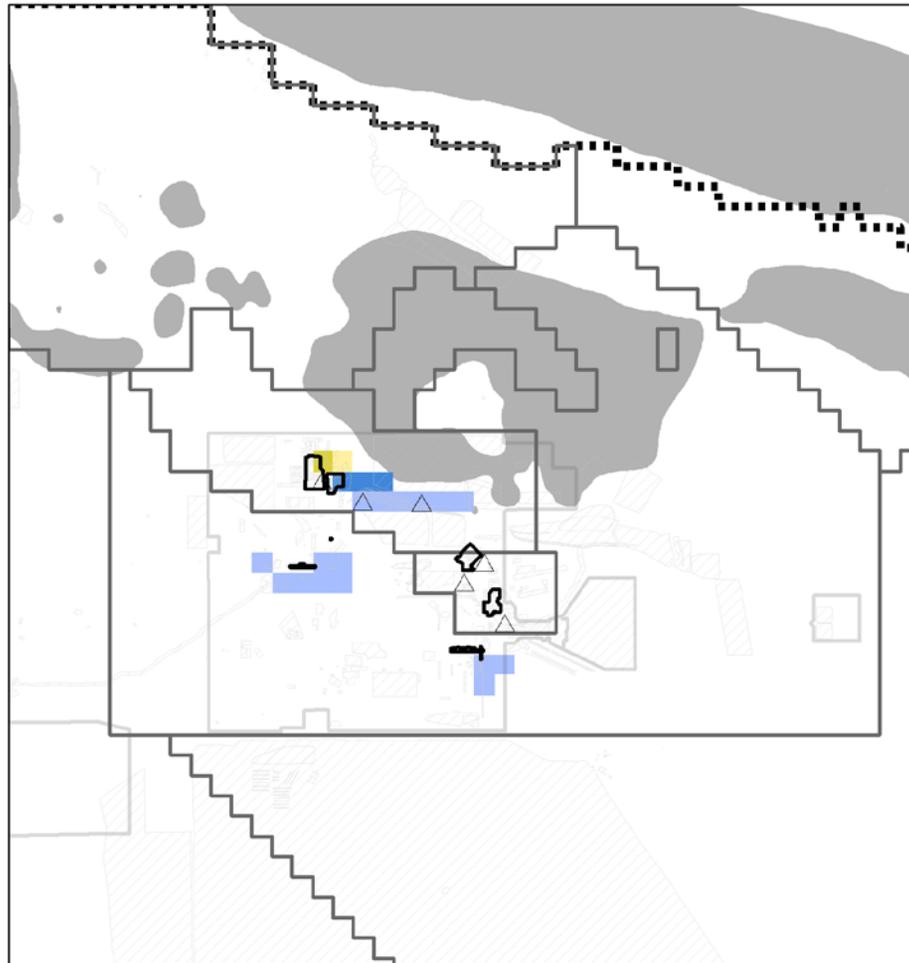
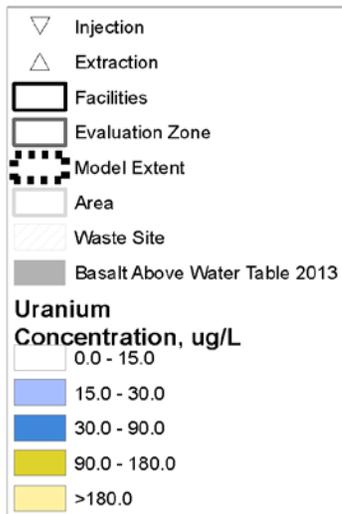
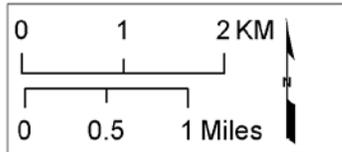
**30 Years
Uranium
Scenario 5
Continuing Source**



P2R_FS_u238_30.png (DoubleFigure_FS.mxd)

Figure B-275 - Plan view contours of the uranium plume at simulation time 30 years based on the scenario 5 simulation with a continuing source term.

**50 Years
Uranium
Scenario 5
Continuing Source**



P2R_FS_u238_50.png (DoubleFigure_FS.mxd)

Figure B-276 - Plan view contours of the uranium plume at simulation time 50 years based on the scenario 5 simulation with a continuing source term.

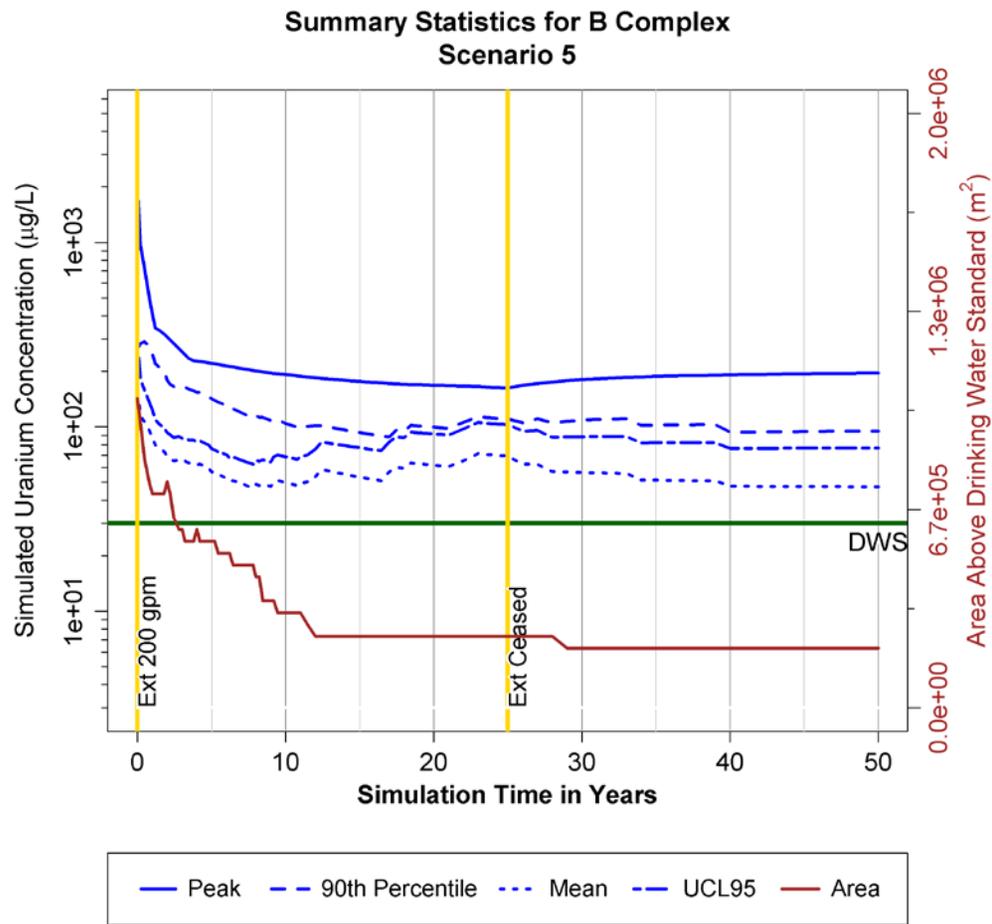


Figure B-277 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 5 simulation with a continuing source term.

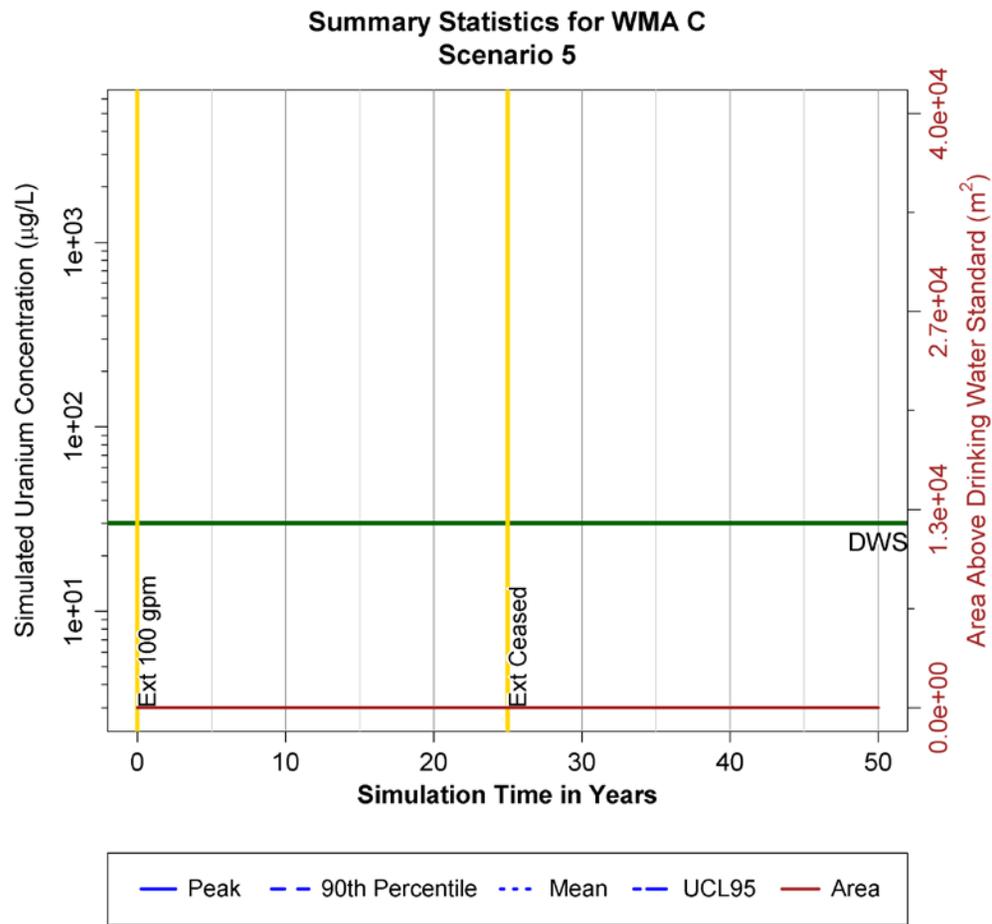


Figure B-278 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 5 simulation with a continuing source term.

Summary Statistics for Greater 200 East Scenario 5

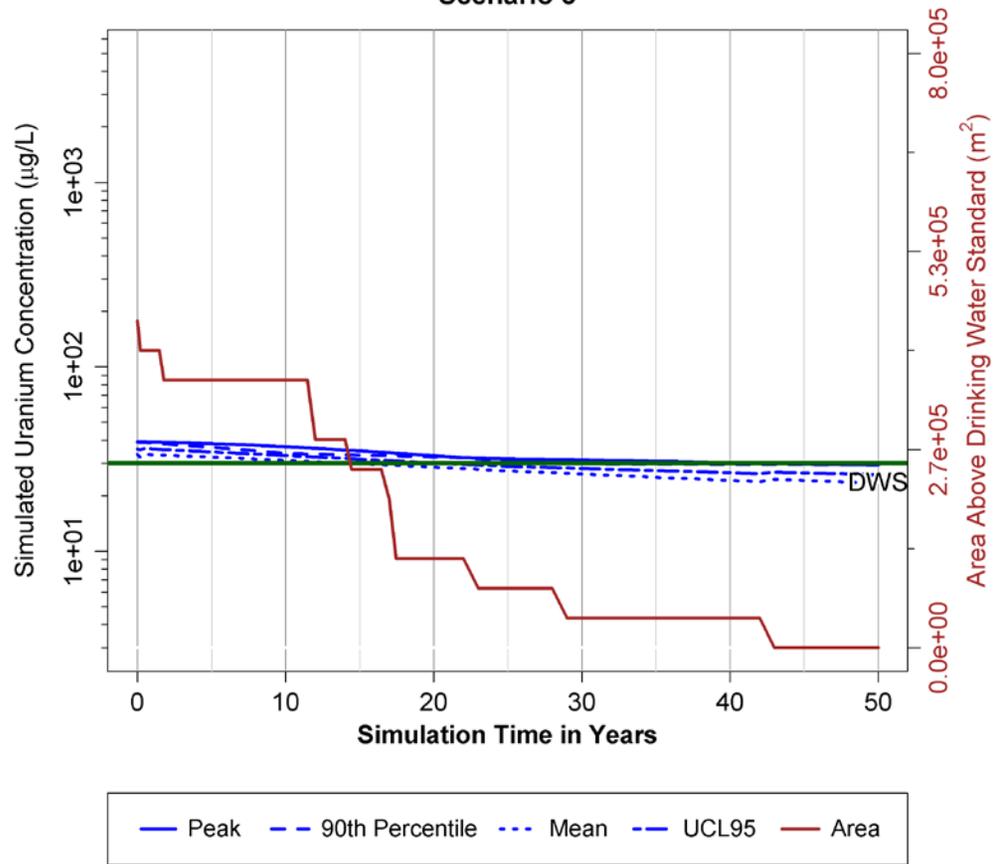


Figure B-279 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 5 simulation with a continuing source term.

Summary Statistics for Gable Gap Area Scenario 5

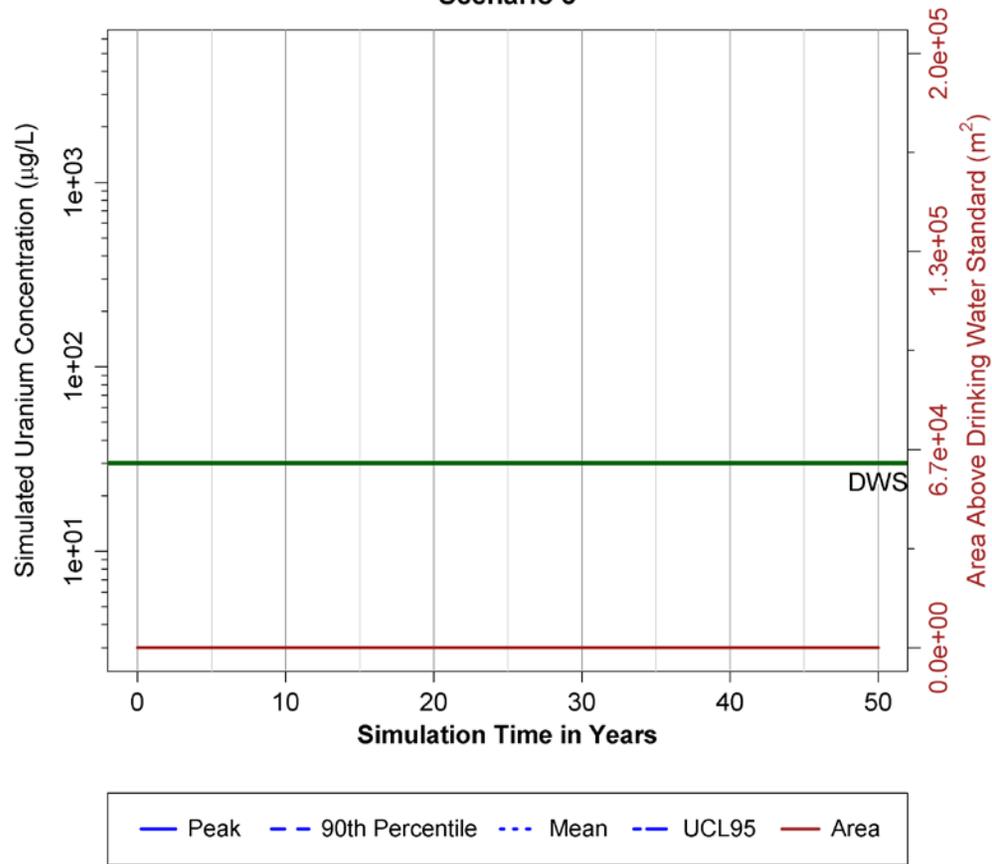


Figure B-280 - Statistical summary of simulated concentration within the model domain for the uranium plume for the scenario 5 simulation with a continuing source term.

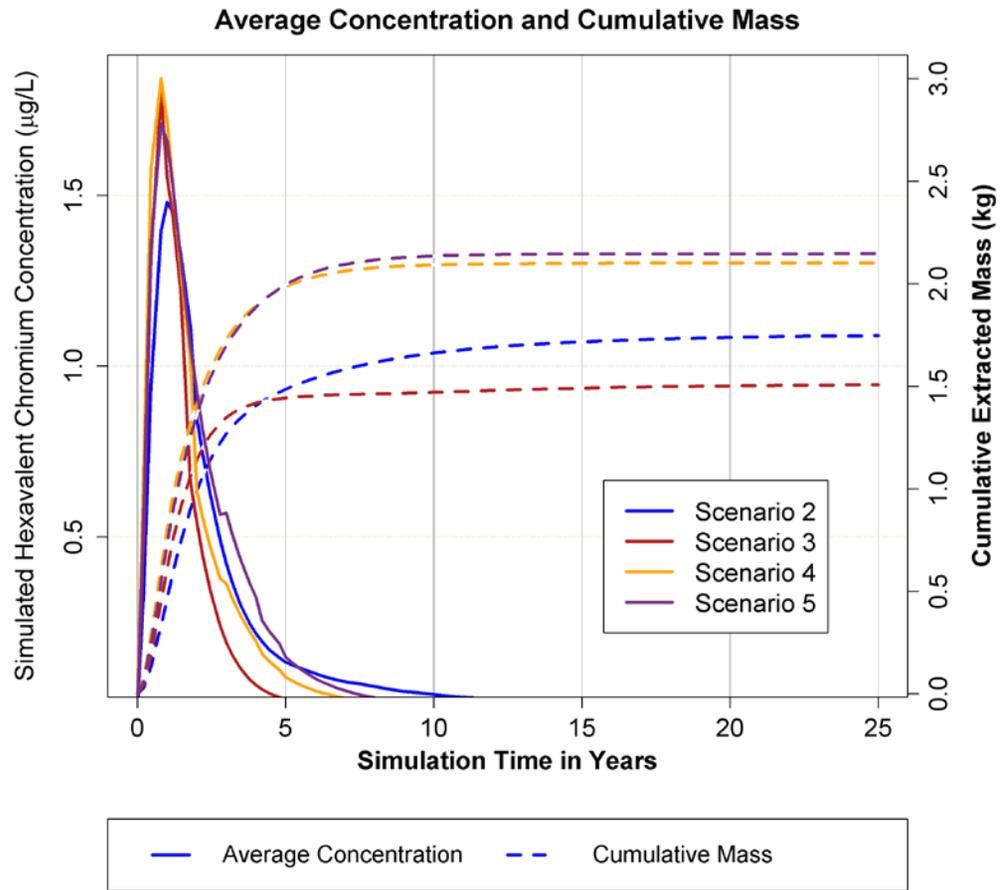


Figure B-281 - Summary of simulated extraction within the model domain for the hexavalent chromium plume for all scenarios.

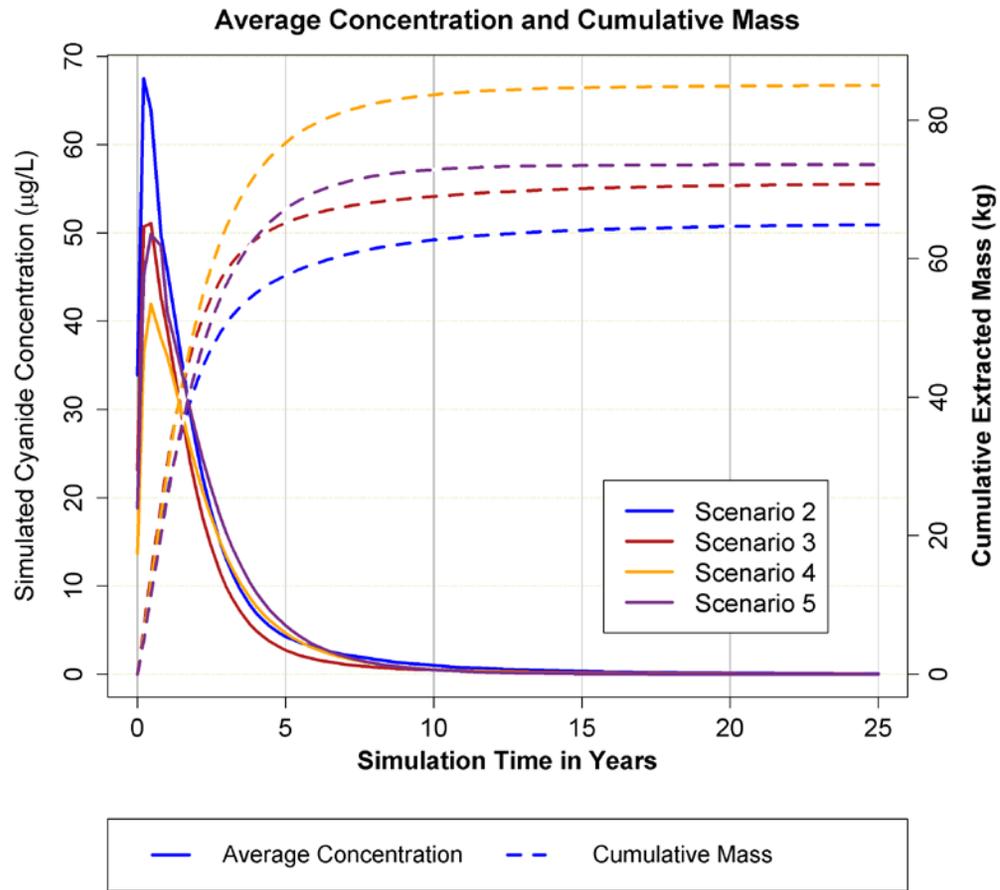


Figure B-282 - Summary of simulated extraction within the model domain for the cyanide plume for all scenarios.

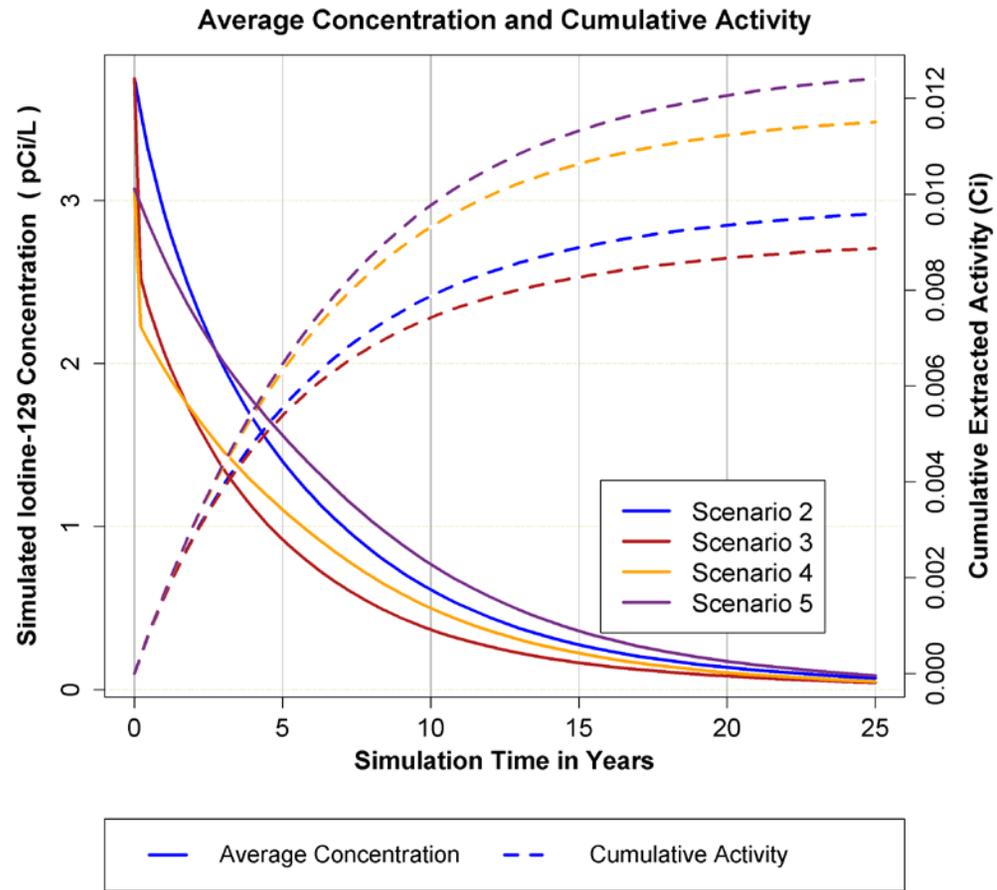


Figure B-283 - Summary of simulated extraction within the model domain for the iodine-129 plume for all scenarios.

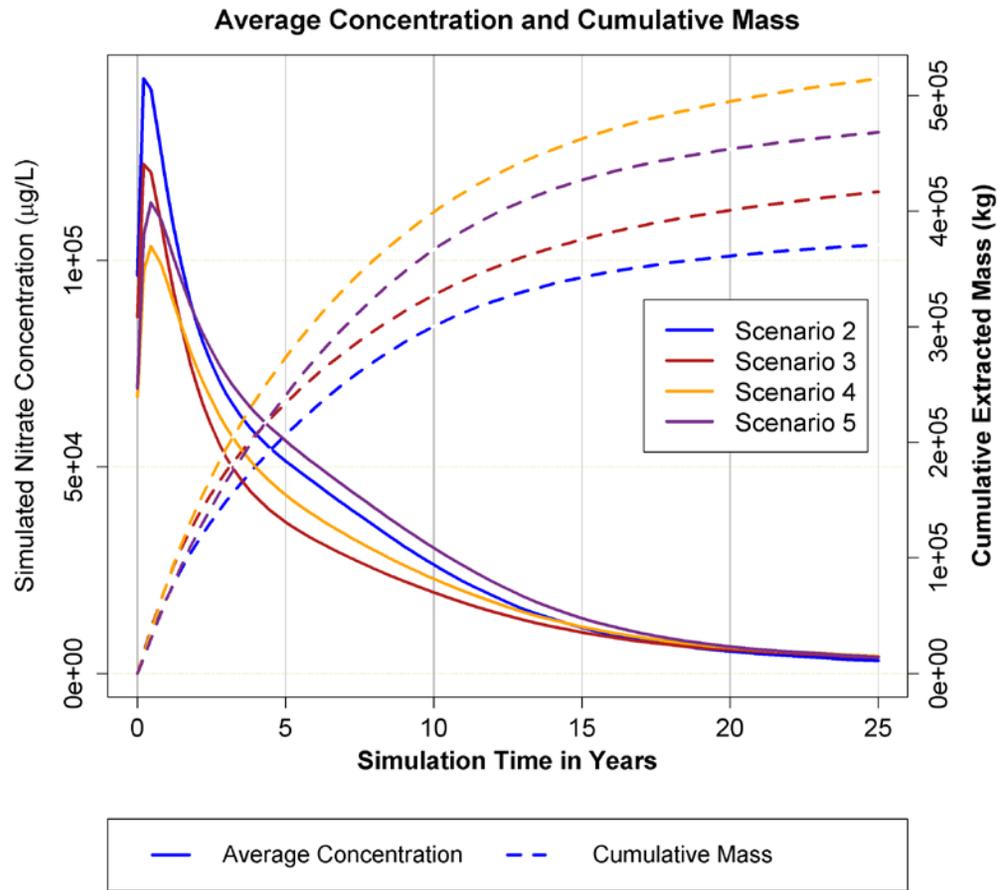


Figure B-284 - Summary of simulated extraction within the model domain for the nitrate plume for all scenarios.

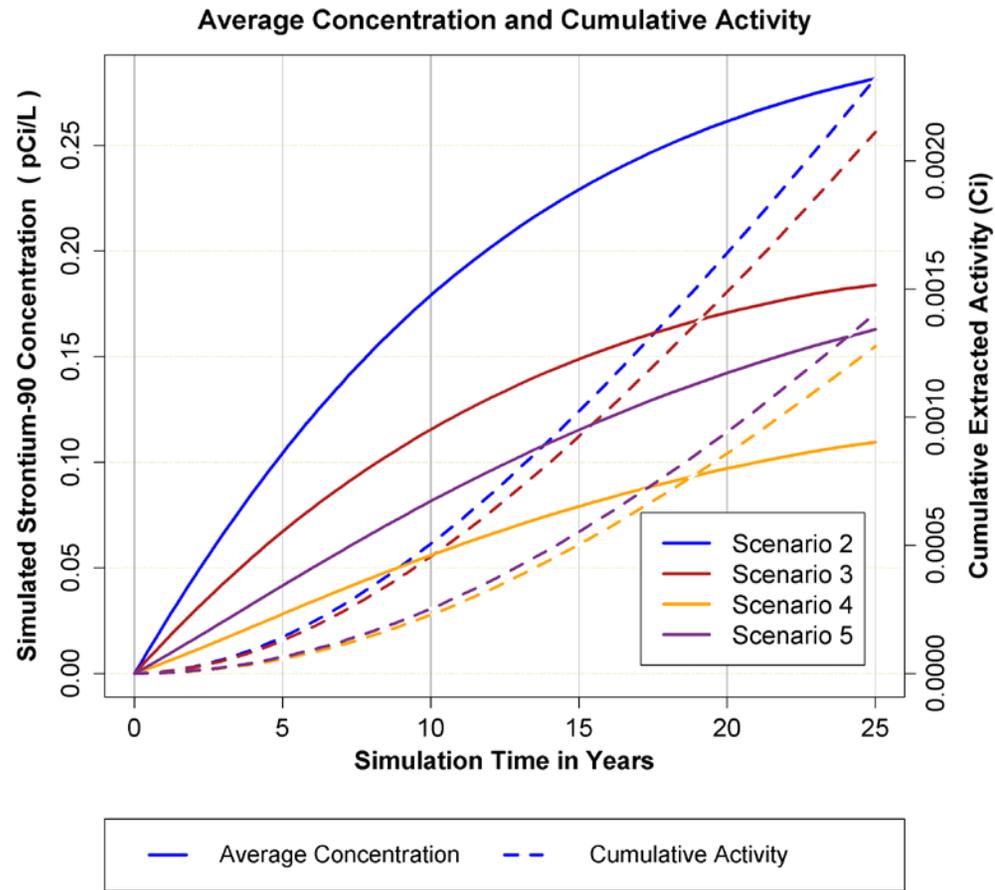


Figure B-285 - Summary of simulated extraction within the model domain for the strontium-90 plume for all scenarios.

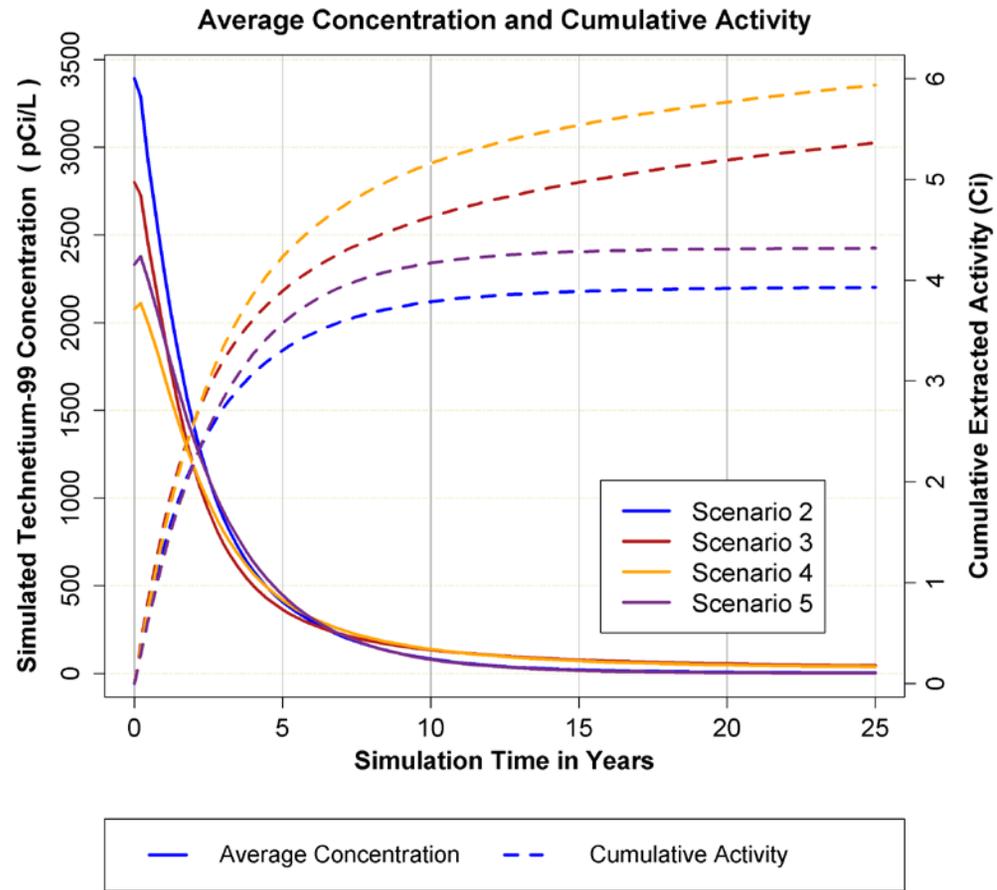


Figure B-286 - Summary of simulated extraction within the model domain for the technetium-99 plume for all scenarios.

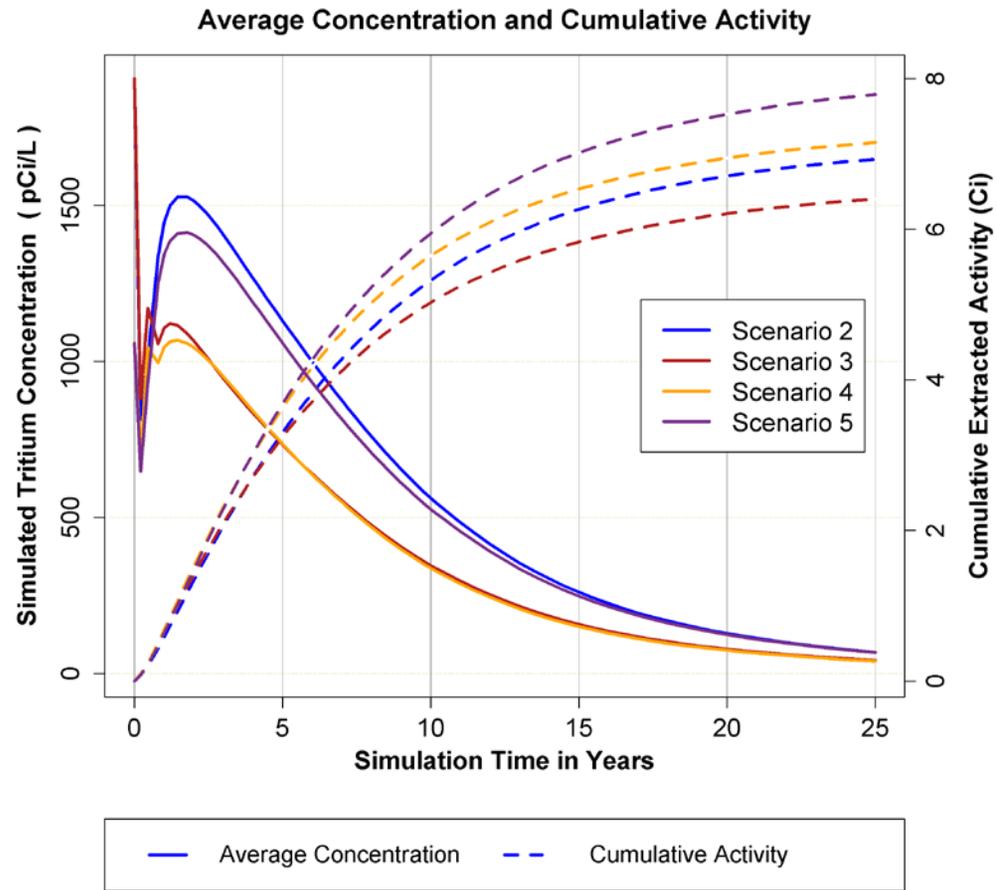


Figure B-287 - Summary of simulated extraction within the model domain for the tritium plume for all scenarios.

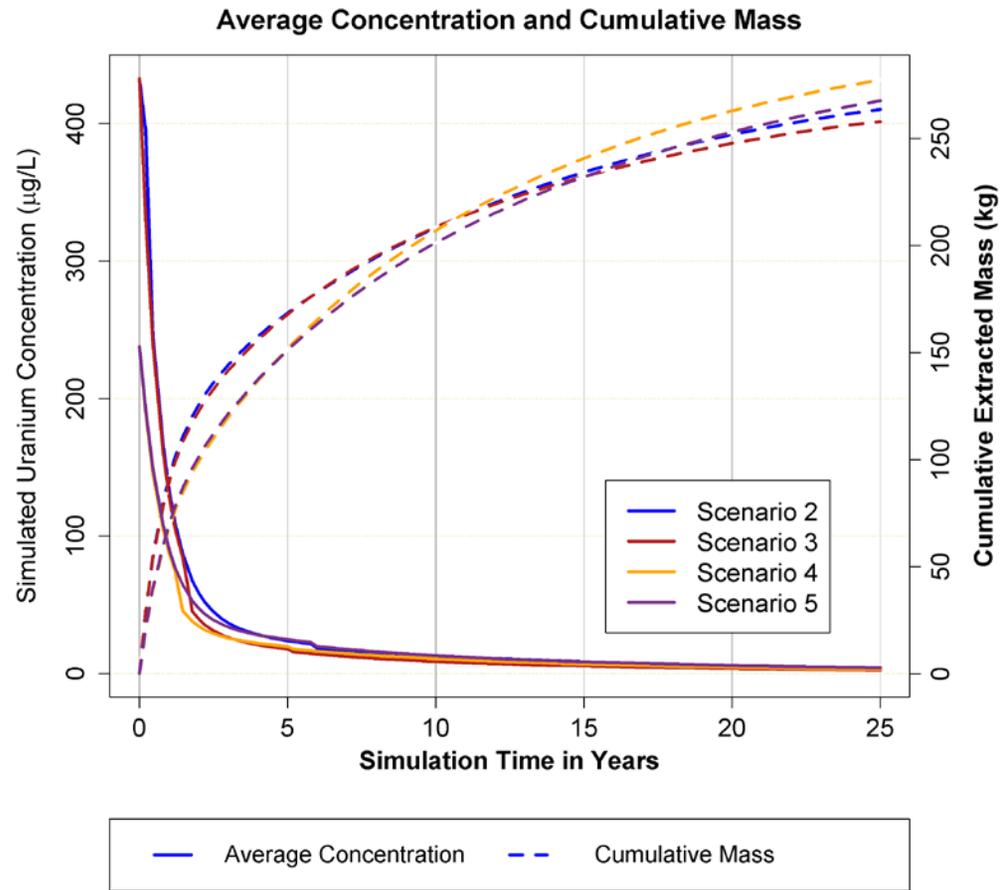


Figure B-288 - Summary of simulated extraction within the model domain for the uranium plume for all scenarios.

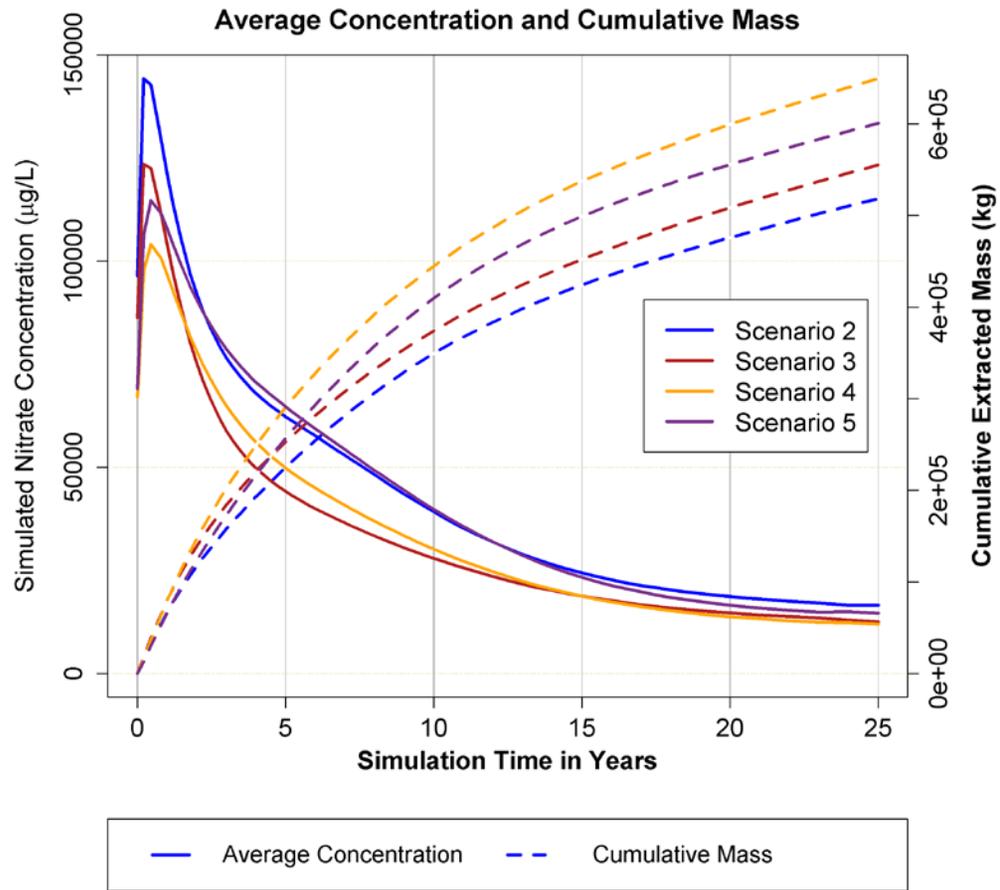


Figure B-289 - Summary of simulated extraction within the model domain for the nitrate plume for all scenarios with a continuing source term.

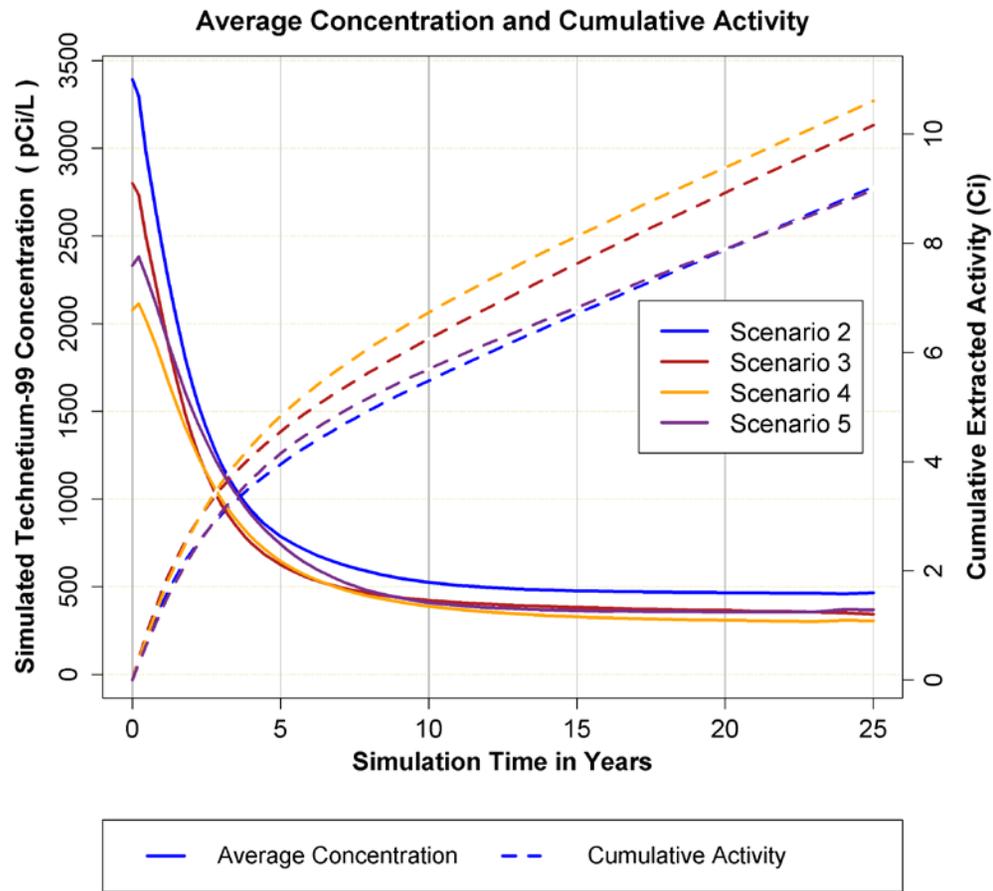


Figure B-290 - Summary of simulated extraction within the model domain for the technetium-99 plume for all scenarios with a continuing source term.

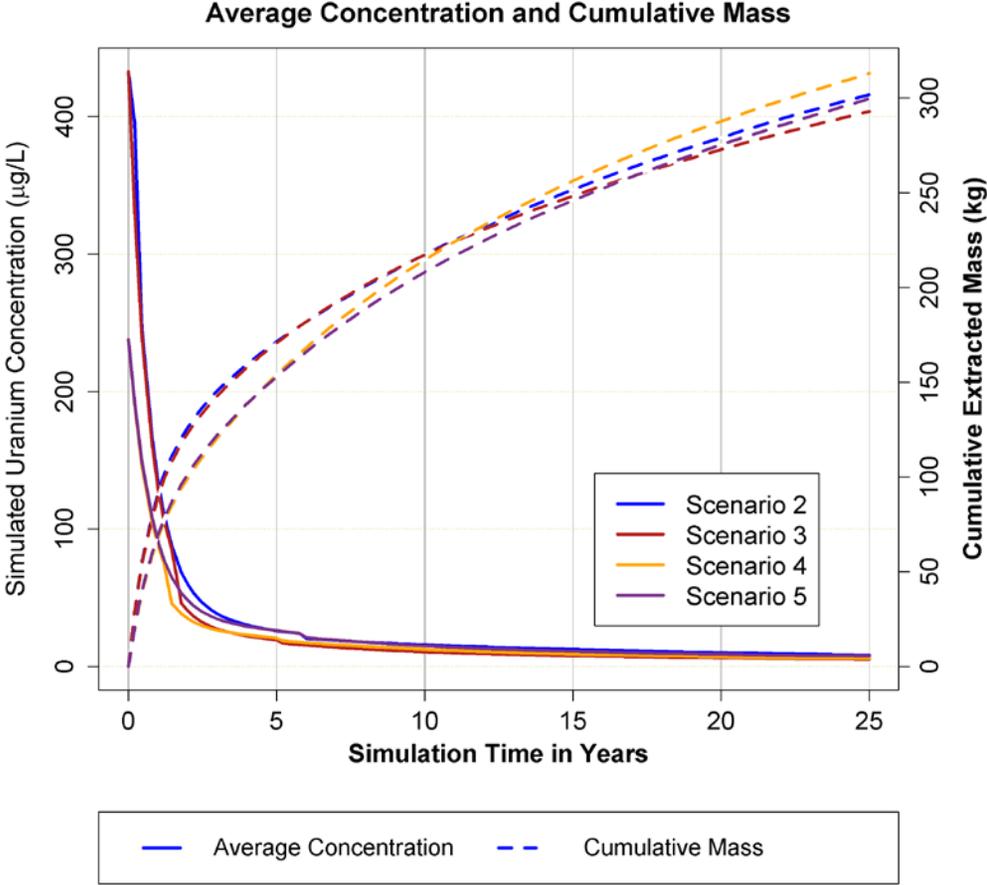


Figure B-291 - Summary of simulated extraction within the model domain for the uranium plume for all scenarios with a continuing source term.