

SRR-CWDA-2019-00101

Revision 0

RSM Track #: 10667

OCT 08 2019

Aaron White
Senior Technical Program Manager for
Waste Removal and Tank Closure
U. S. DOE Savannah River Site
Waste Disposition Programs Division

Dear Mr. White:

**ACTION ITEM FOLLOW-UP IN SUPPORT OF U.S. NUCLEAR REGULATORY
COMMISSION F AND H AREA TANK FARMS AND SALT WASTE DISPOSAL
MONITORING ACTIVITIES**

Ref:

1. SRR-CWDA-2019-00022, *Savannah River Site F and H Tank Farms NRC Onsite Observation Visit March 18-19, 2019*, Savannah River Site, Aiken, SC, Revision 1, March 2019.
2. SRR-CWDA-2016-00052, *Savannah River Site Salt Waste Disposal NRC Onsite Observation Visit April 19-21, 2016*, Savannah River Site, Aiken, SC, Revision 1, April 2016.
3. WSRC-TR-96-0399, *Integrated Hydrogeological Model of the General Separations Area Volume 2: Groundwater Flow Model*, Savannah River Site, Aiken, SC, Revision 1, April 1999.
4. WSRC-TR-2004-00106, *Groundwater Flow Model of the General Separations Area Using PORFLOW*, Savannah River Site, Aiken, SC, Revision 0, July 2004.

The following information is being provided in follow-up to three open Action Items from the March 2019 Onsite Observation Visit (OOV) for F and H-Area Tank Farms and one Action Item from the April 2016 Salt Waste Disposal OOV by the U. S. Nuclear Regulatory Commission (NRC). The Action Items include the following:

- NRC # TFs-CY19-01-007 (Action Item #7 from 3/2019 OOV, Reference 1)
 - *DOE to conduct particle tracking using GSA_2018 model: a) forward tracking from potential FIPSL and Tank 8 sources, b) reverse tracking from FTF-28 and FTF-12R monitoring wells, and c) reverse tracking from those Crouch Branch seepage areas above the Tan Clay Confining Zone.*
- NRC # TFs-CY19-01-010 (Action Item #10 from 3/2019 OOV, Reference 1)
 - *DOE to provide NRC and SCDHEC with a GSA_2018 model water budget summary comparable to Figure 46 in WSRC-TR-96-0399 Revision 1.*
- NRC # TFs-CY19-01-011 (Action Item #11 from 3/2019 OOV, Reference 1)
 - *DOE to provide NRC and SCDHEC with GSA_2018 model cross section views similar to Figure 2-8 in WSRC-TR-2004-00106.*
- NRC # SDF-CY16-01-013 (Action Item #13 from 4/2016 OOV, Reference 2)
 - *DOE to provide NRC with velocity field and cross-section through Z-Area.*

NRC # TFs-CY19-01-007 (Action Item 7 from 3/2019 OOV)

Figure 1 illustrates reverse groundwater particle tracks emanating from the top and bottom of the FTF-28 and FTF-12R well screens. Also shown are forward tracks from the upgradient and downgradient sides of Tank 8, and one forward track from the F-Area Inactive Process Sewer Line (FIPSL) near FTF-28 and FTF-12R.

Figures 2 through 5 provide reverse groundwater particle tracks from Crouch Branch seepage areas that are located above the tan clay confining zone (TCCZ).

Figure 1. Groundwater particle tracks simulated with GSA2018.LW flow model near Tank 8 and the F-Area Inactive Process Sewer Line (FIPSL). Forward and backward tracks denoted with blue and red arrows respectively.

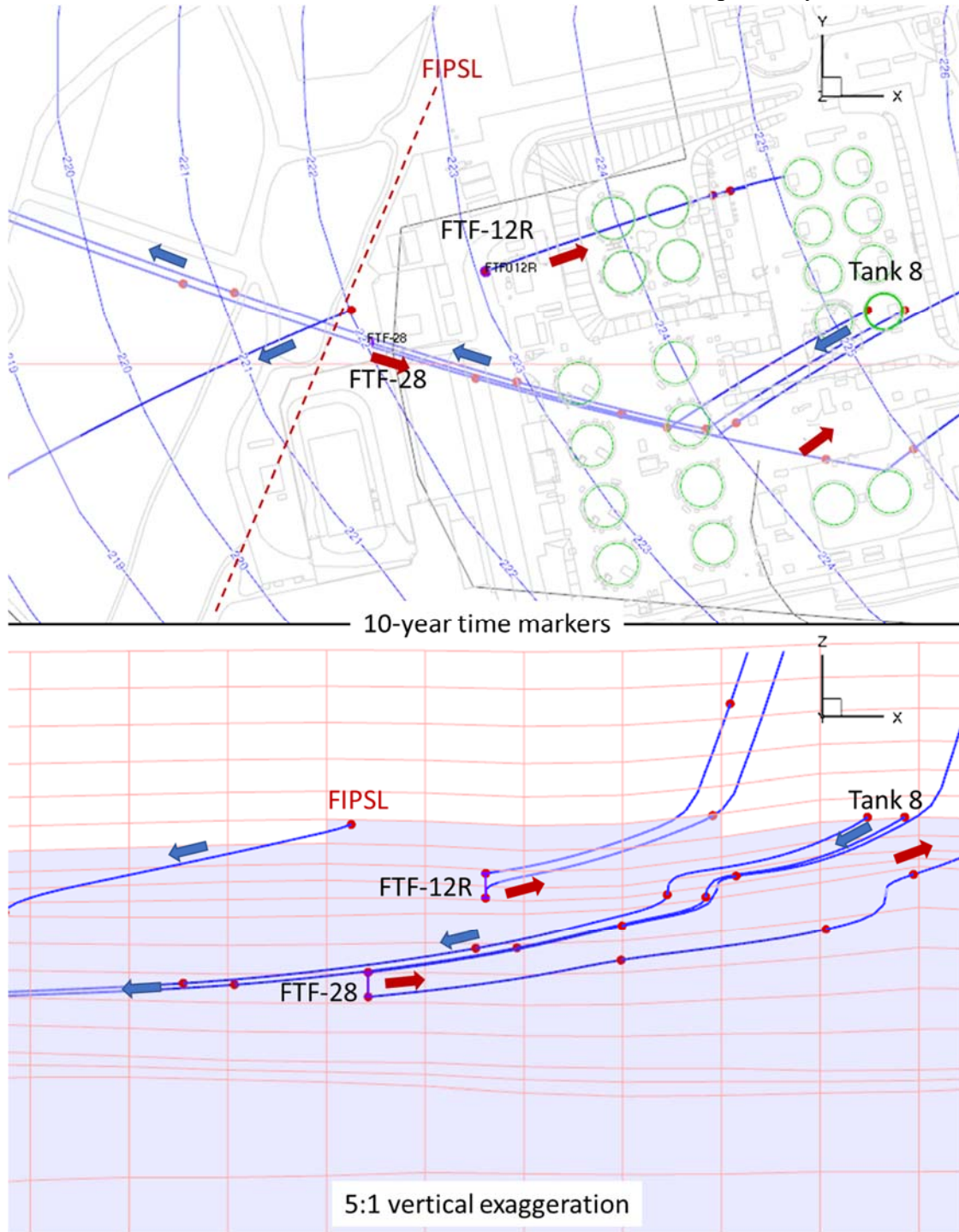


Figure 2. GSA2018.LW flow model with surveyed seepelines and Liquid Waste facilities.

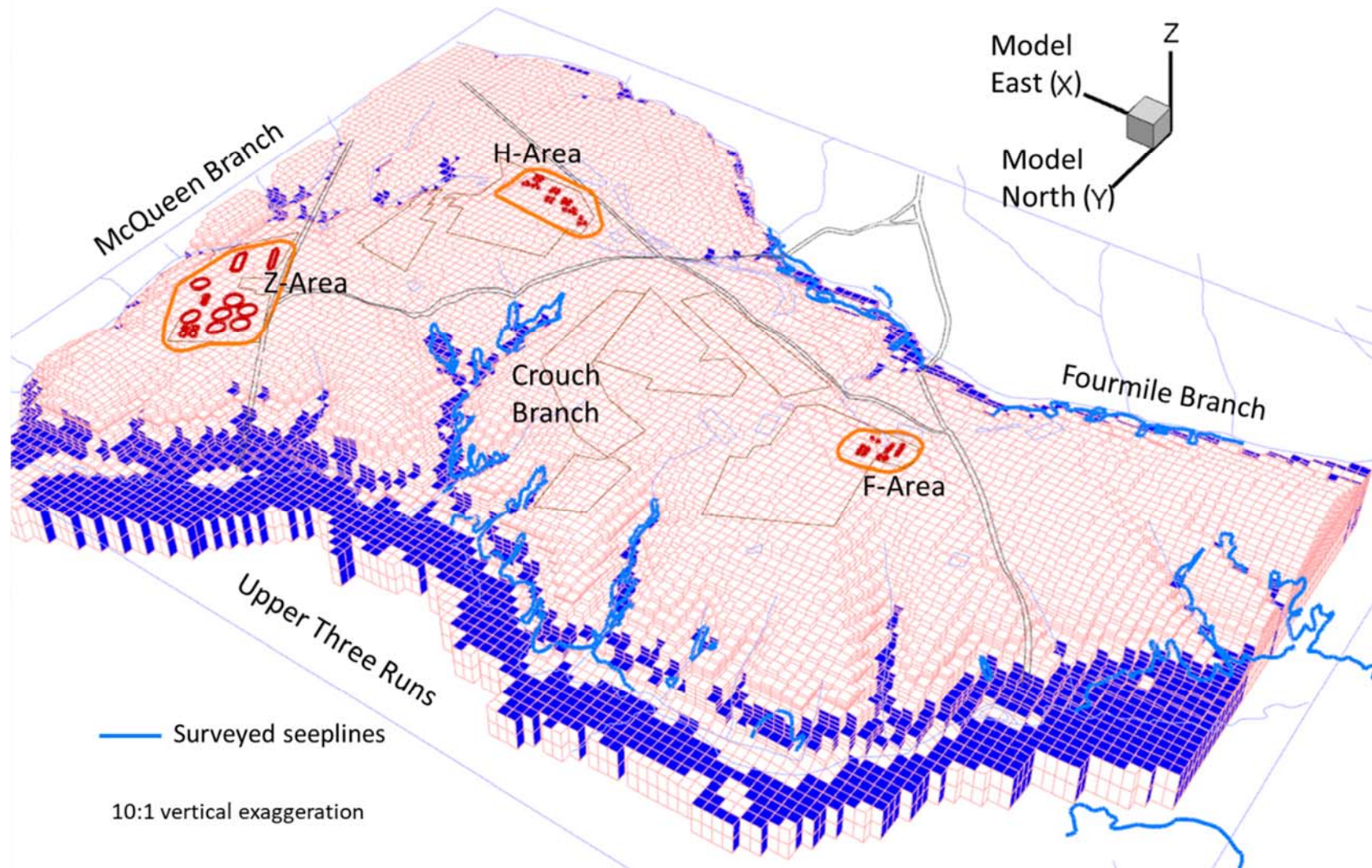


Figure 3. Crouch Branch seepage areas above and below the tan clay confining zone (TCCZ).

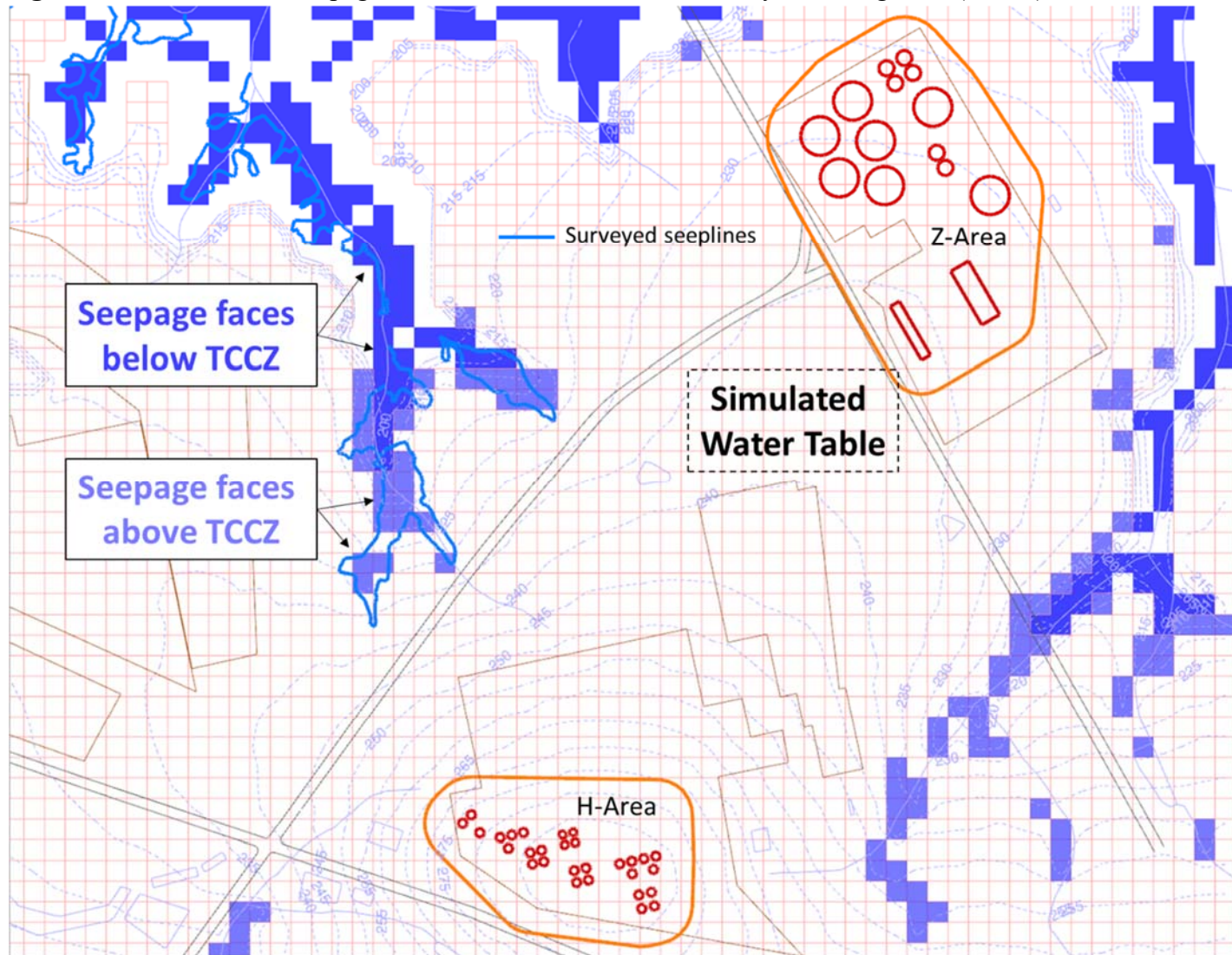


Figure 4. Reverse groundwater particle tracks from Crouch Branch seepage areas above the TCCZ.

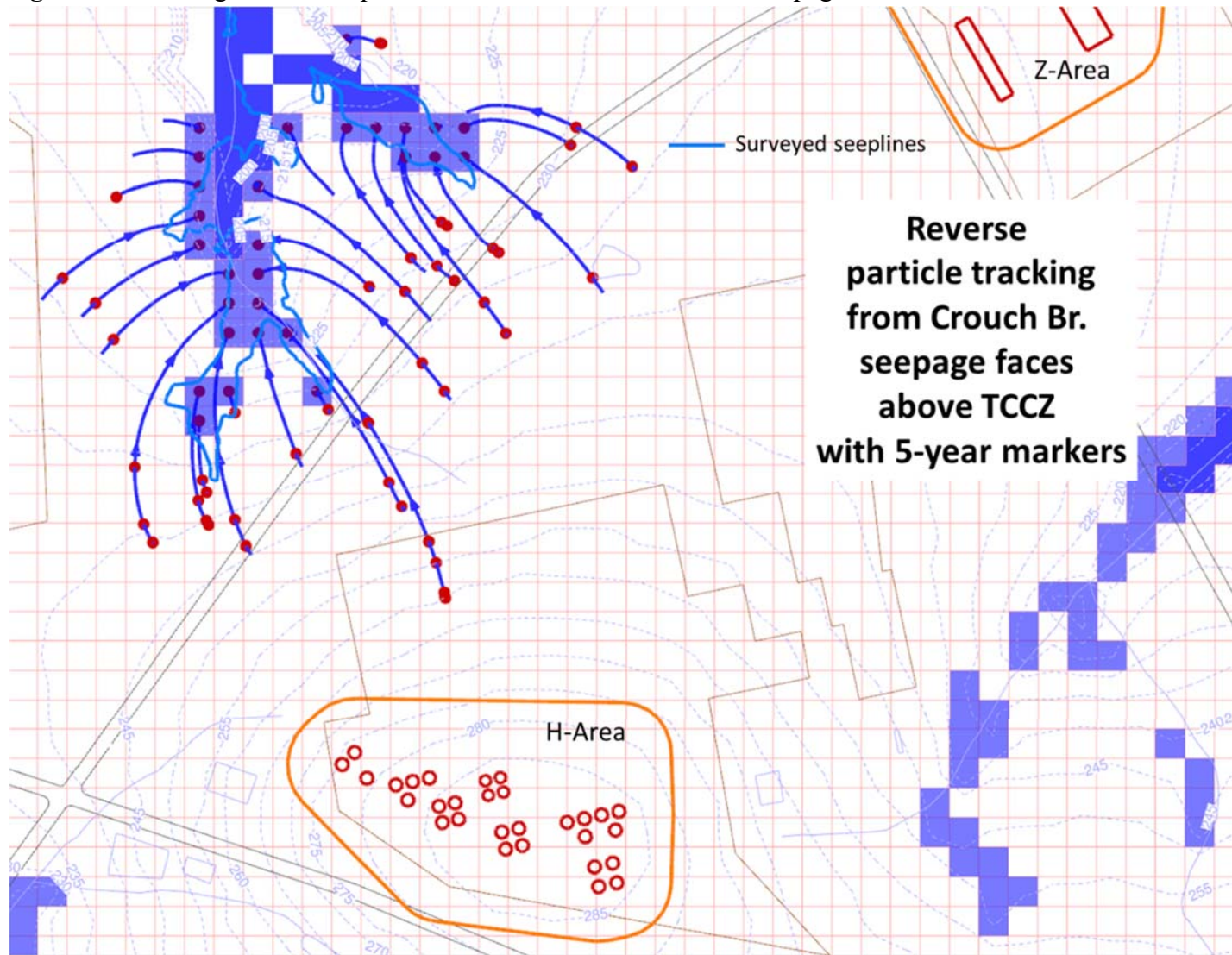
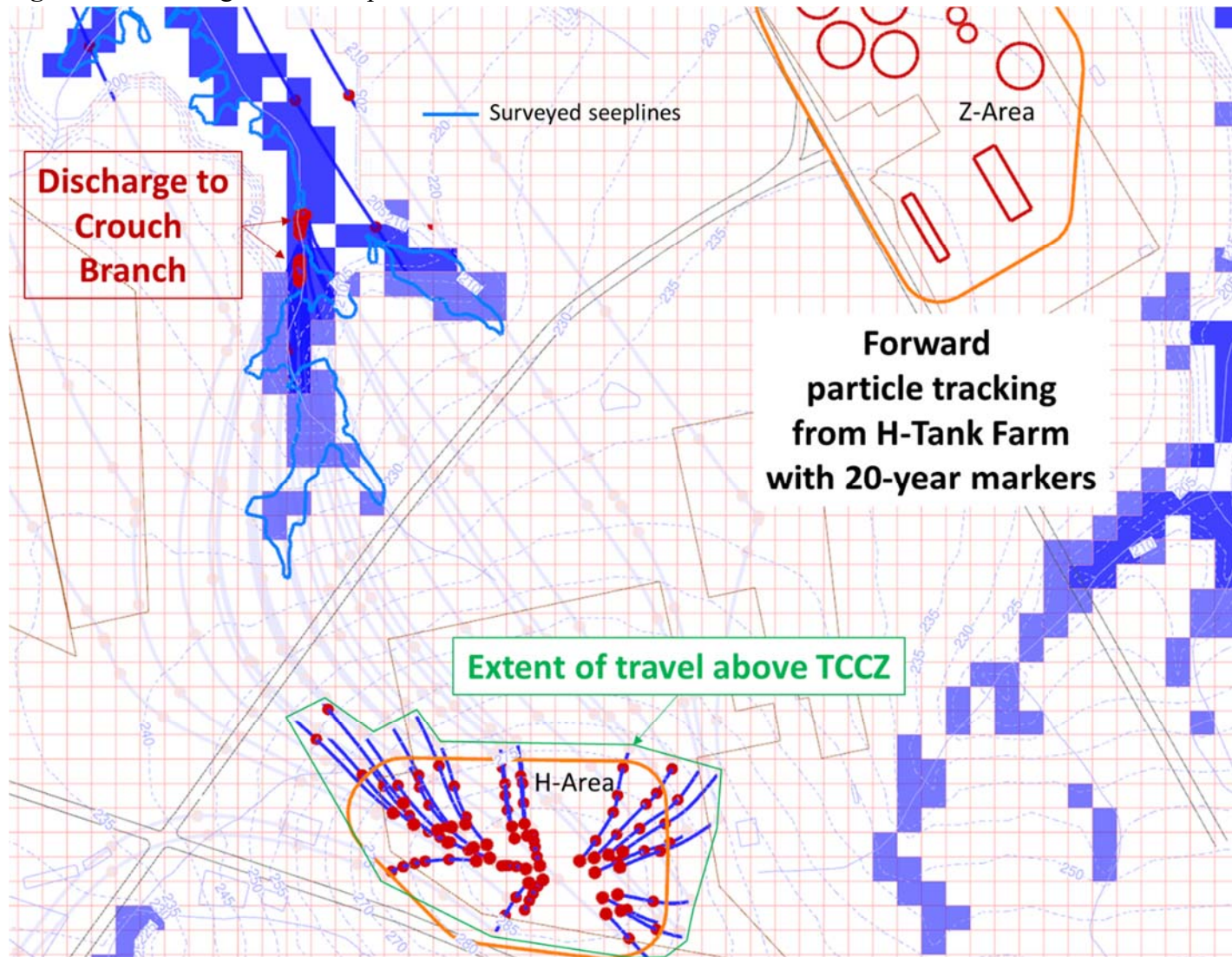


Figure 5. Forward groundwater particle tracks from H-Area Tank Farm tanks.



NRC # TFs-CY19-01-010 (Action Item 10 from 3/2019 OOV)

Figure 6 and Table 1 provide a water budget for the GSA2018.LW groundwater flow model that is comparable to Figure 46 in WSRC-TR-96-0399 Revision 1 (Reference 3).

Figure 6. Reproduction of Figure 46 from WSRC-TR-96-0399

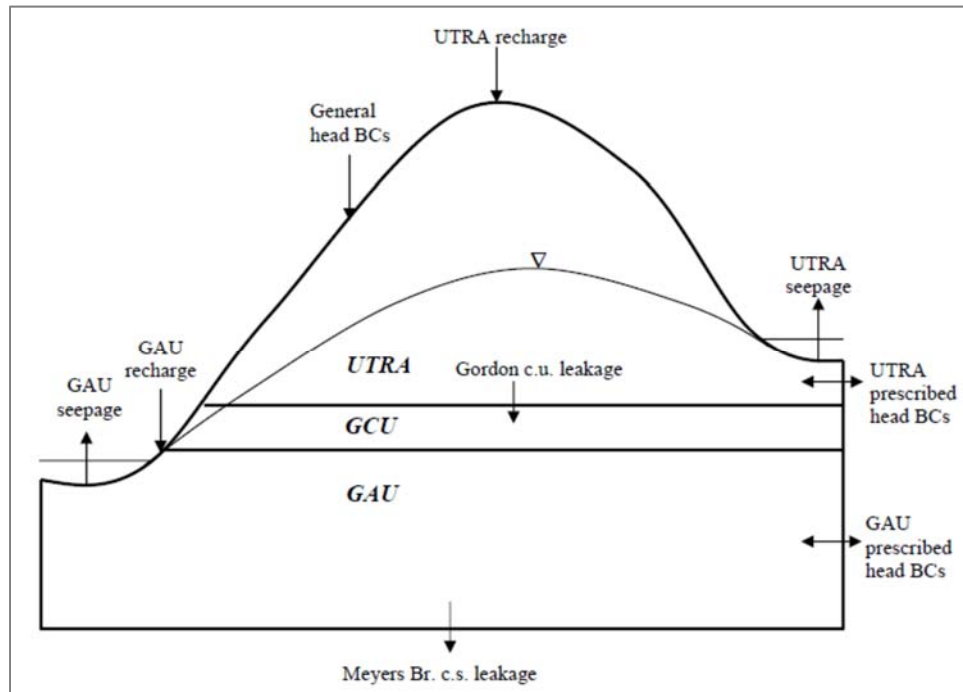


Table 1. Water budget for the GSA2018.LW groundwater flow model.

Flow Component (ft ³ /s)	Entire Model	UTR Aquifer	Gordon Aquifer*
Recharge	9.98	9.74	0.24
Seepage	-13.76	-9.38	-4.38
Prescribed head boundary conditions	3.46	-0.20	3.67
General head boundary conditions	0.04	0.04	N/A
Gordon confining unit leakage	N/A	-0.18	0.18
Meyers Branch confining system leakage	0.24	N/A	0.24
Net total flow	-0.03	0.01	-0.05
%Difference	-0.31%	0.14%	-0.45%

* includes Gordon confining unit

NRC # TFS-CY19-01-011 (Action Item 11 from 3/2019 OOV) and NRC # SDF-CY16-01-013 (Action Item #13 from 4/2016 OOV)

Figures 7 and 8 provide a cross-section of the GSA2018.LW velocity field through E-Area comparable to Figure 2-8 in WSRC-TR-2004-00106 (Reference 4). In addition, Figures 9 through 14 provide similar cross-sections for F-, H- and Z-Areas. Figures 15 through 20 provide cross-sections in the east-west direction for F-, H- and Z-Areas.

Figure 7. North-south cross-section of GSA2018.LW velocity field through E-Area; vectors are fixed length showing flow direction only.

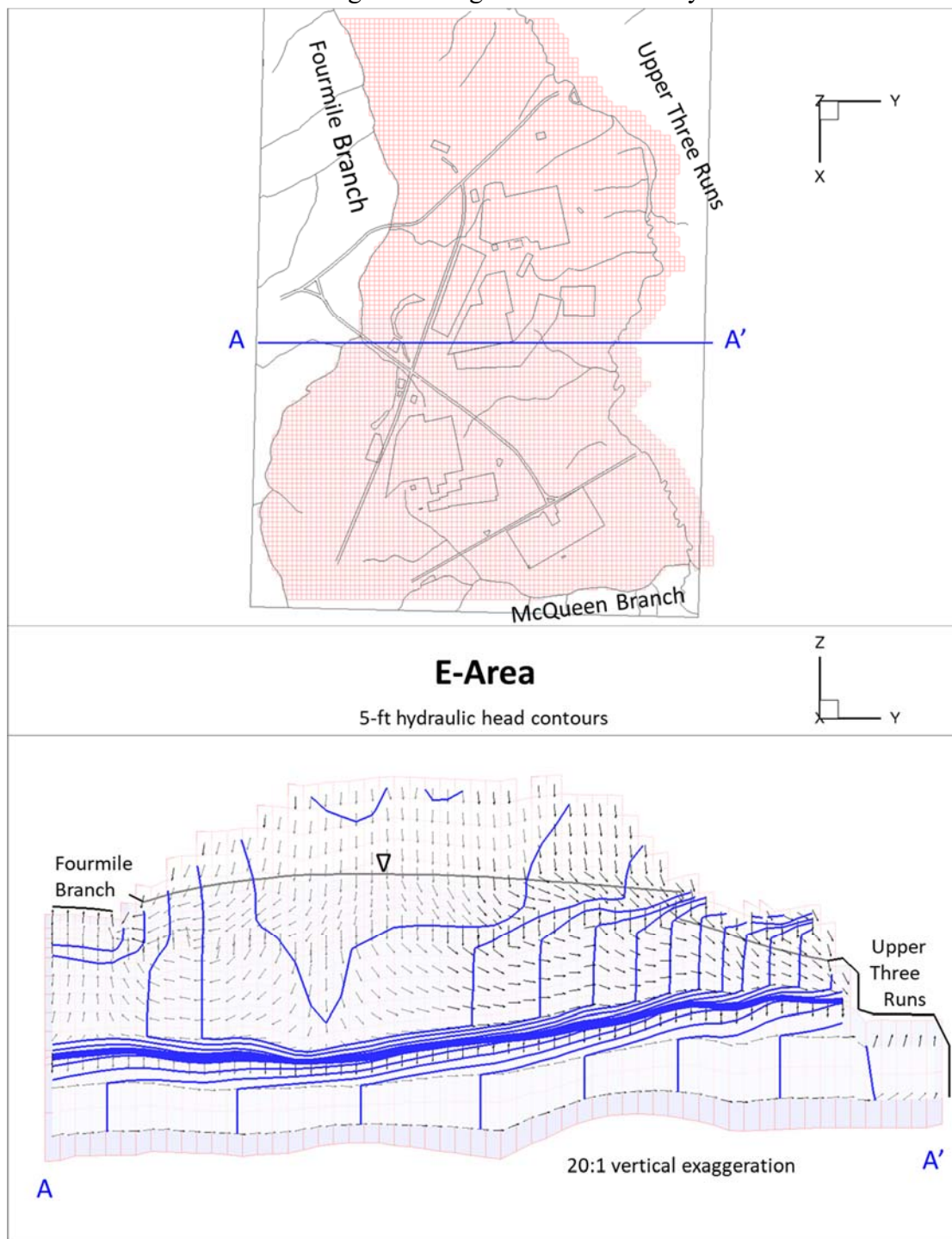


Figure 8. Enlarged view of Figure 7 north-south cross-section of GSA2018.LW velocity field through E-Area; vectors are fixed length showing flow direction only.

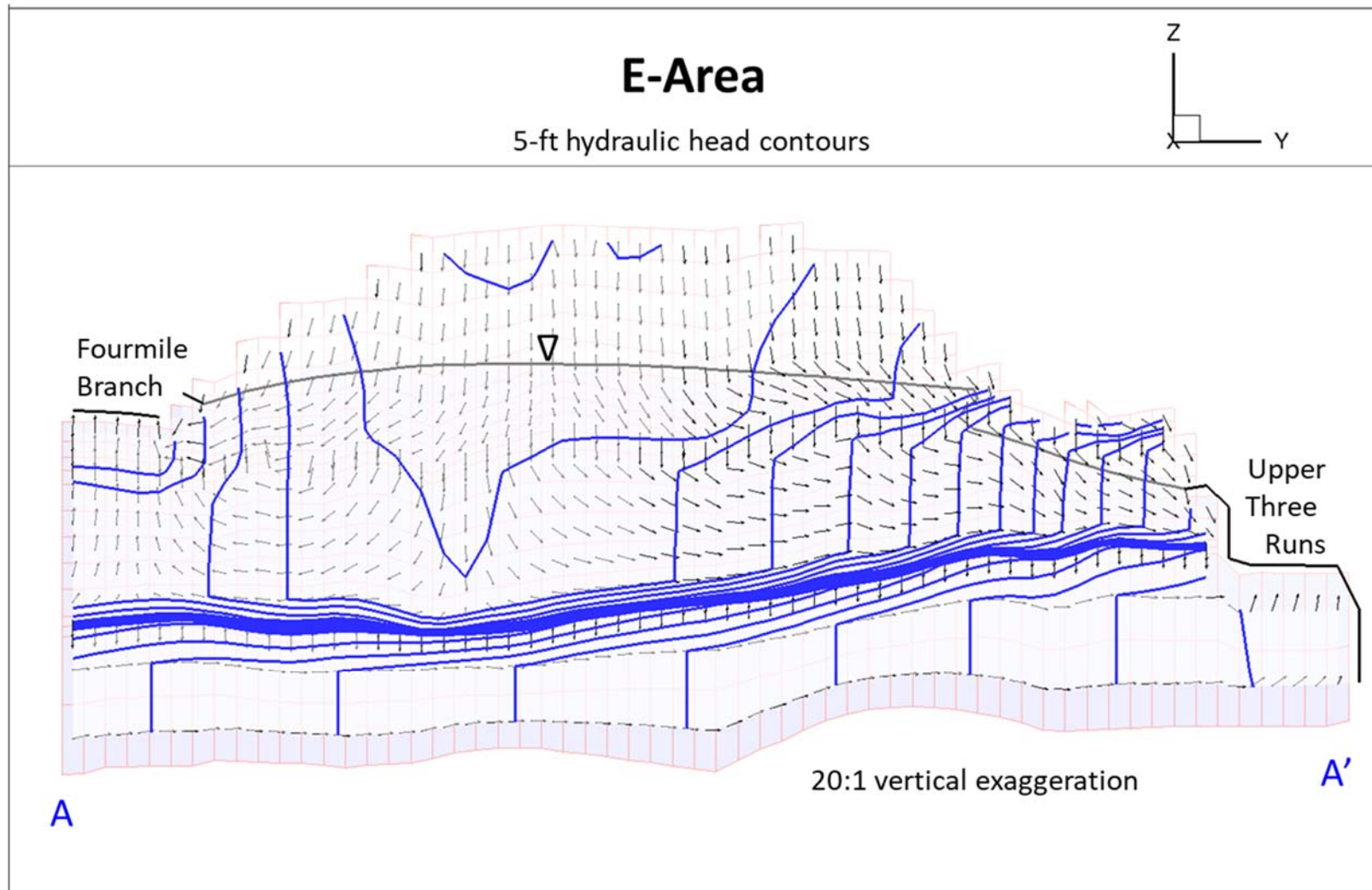


Figure 9. North-south cross-section of GSA2018.LW velocity field through F-Area; vectors are fixed length showing flow direction only.

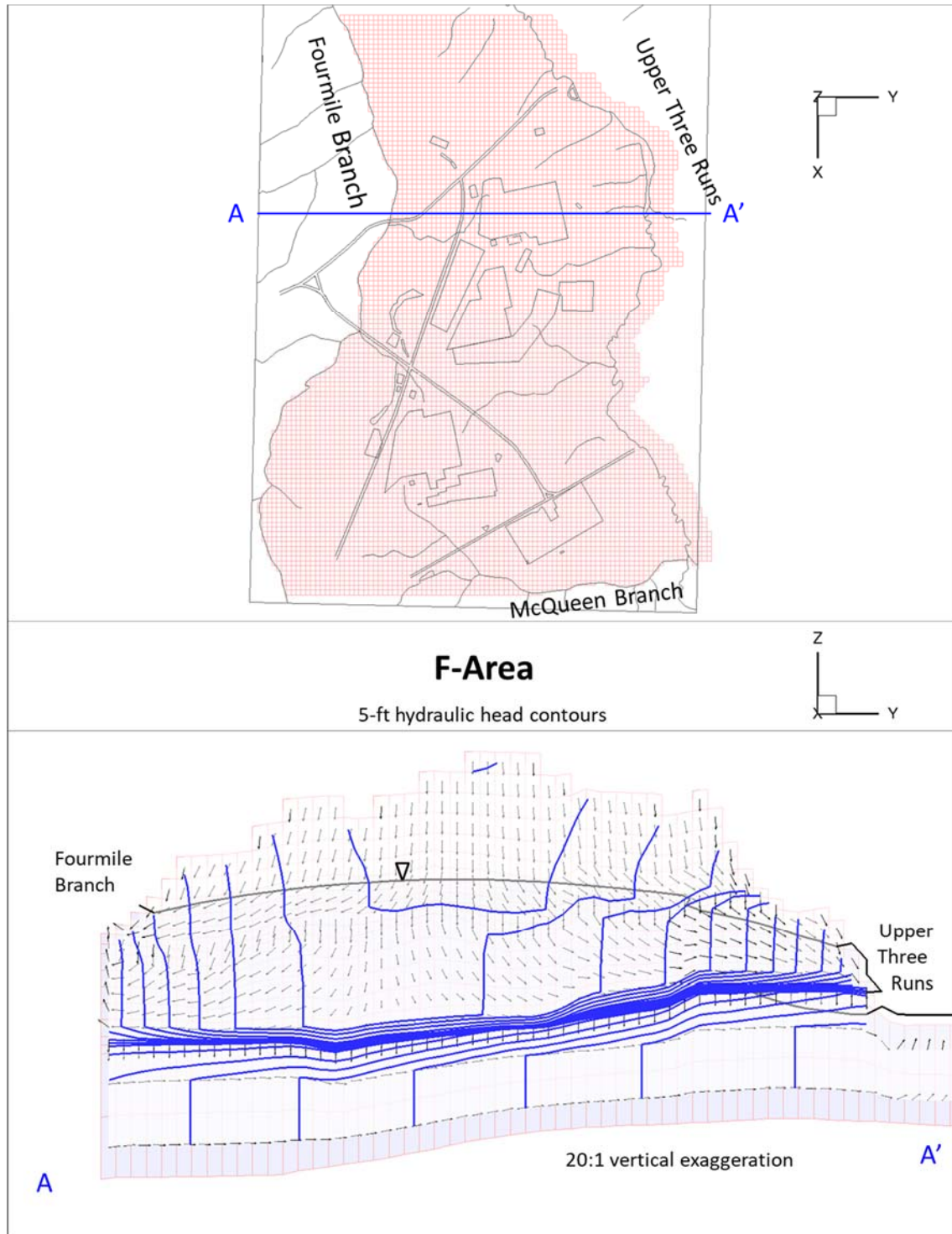


Figure 10. Enlarged view of Figure 9 north-south cross-section of GSA2018.LW velocity field through F-Area; vectors are fixed length showing flow direction only.

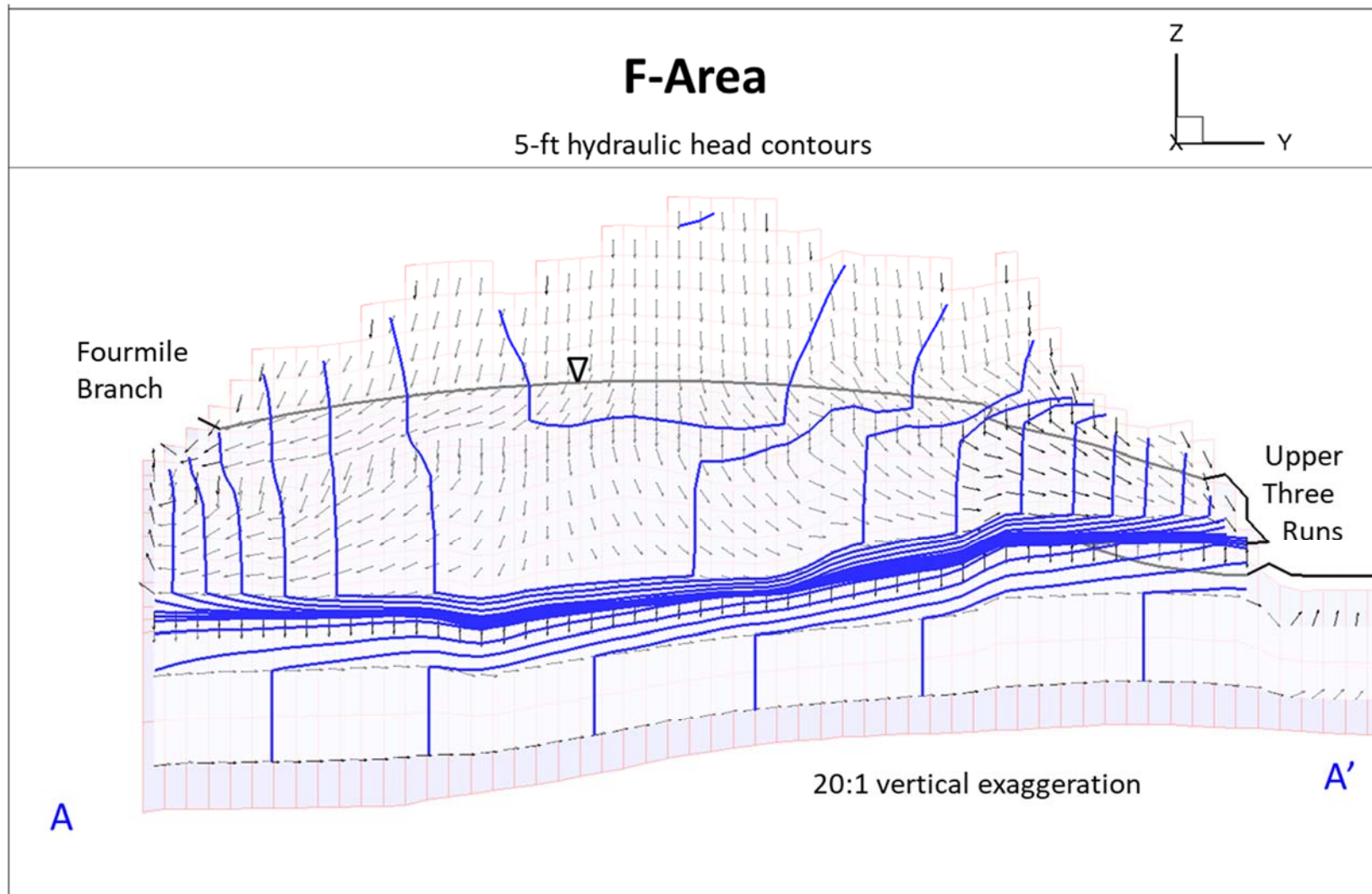


Figure 11. North-south cross-section of GSA2018.LW velocity field through H-Area; vectors are fixed length showing flow direction only.



Figure 12. Enlarged view of Figure 11 north-south cross-section of GSA2018.LW velocity field through H-Area; vectors are fixed length showing flow direction only.

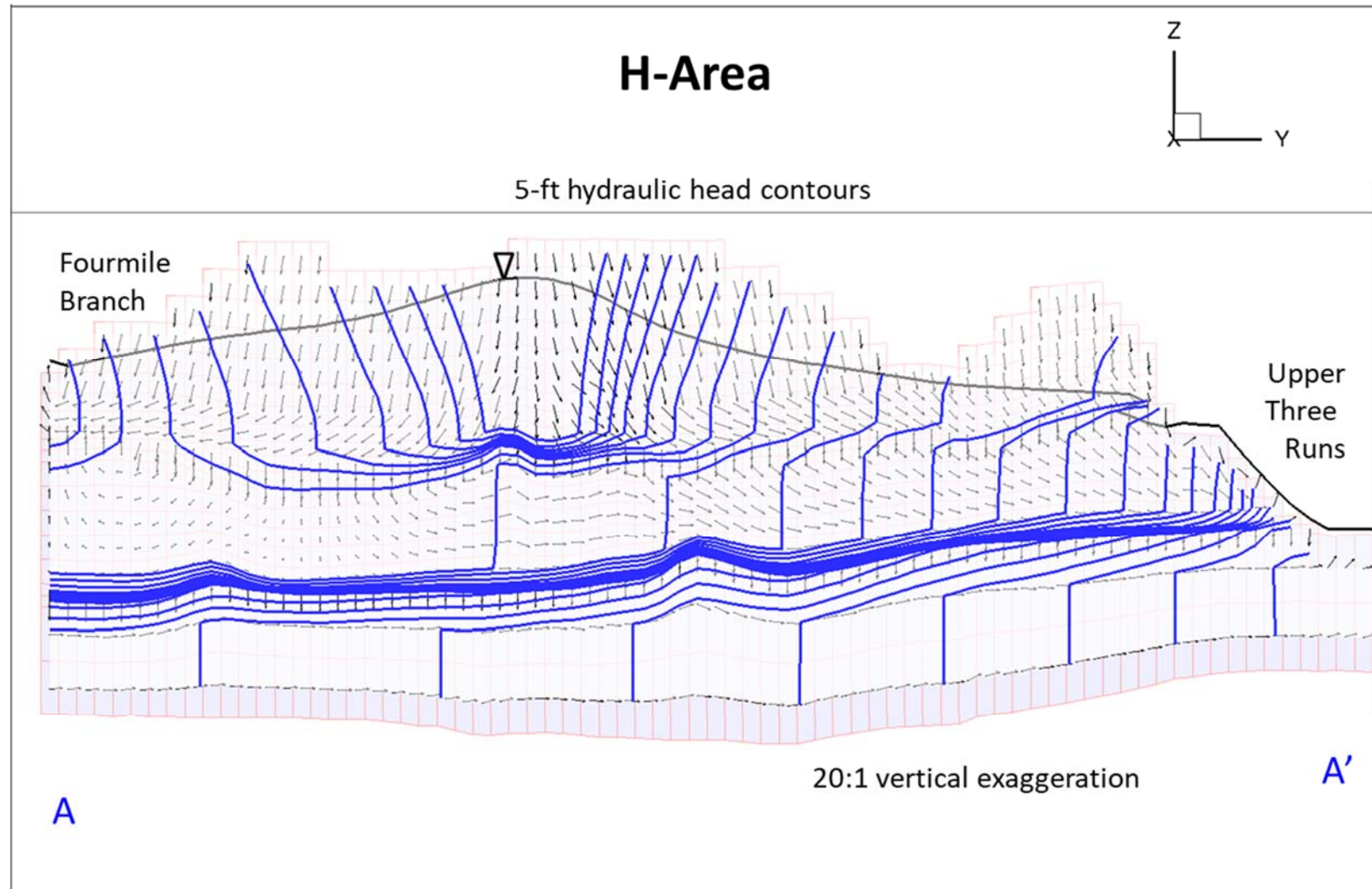


Figure 13. North-south cross-section of GSA2018.LW velocity field through Z-Area; vectors are fixed length showing flow direction only.



Figure 14. Enlarged view of Figure 13 north-south cross-section of GSA2018.LW velocity field through Z-Area; vectors are fixed length showing flow direction only.

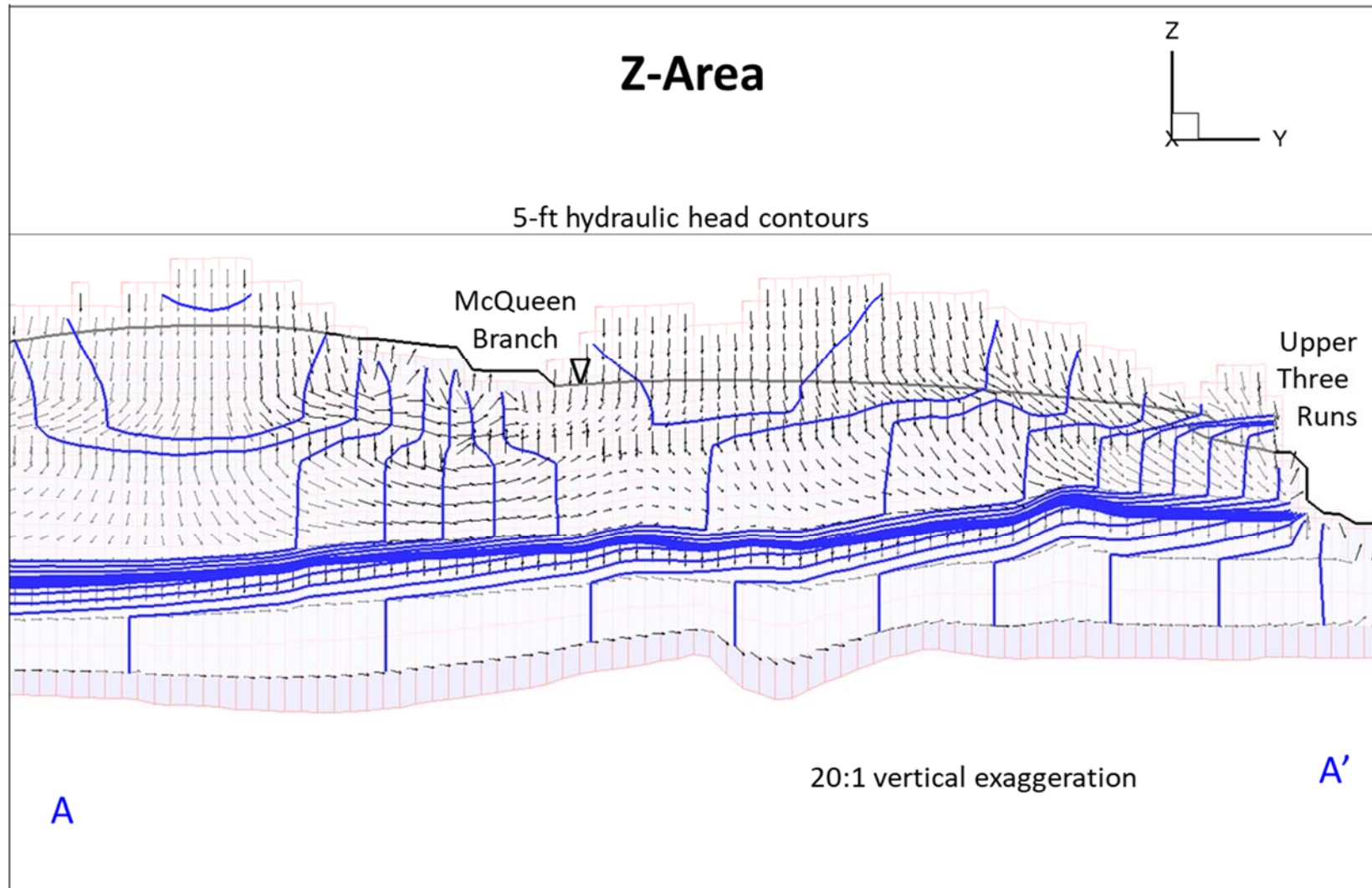


Figure 15. East-west cross-section of GSA2018.LW model through F-Area;
vectors are fixed length showing flow direction only.

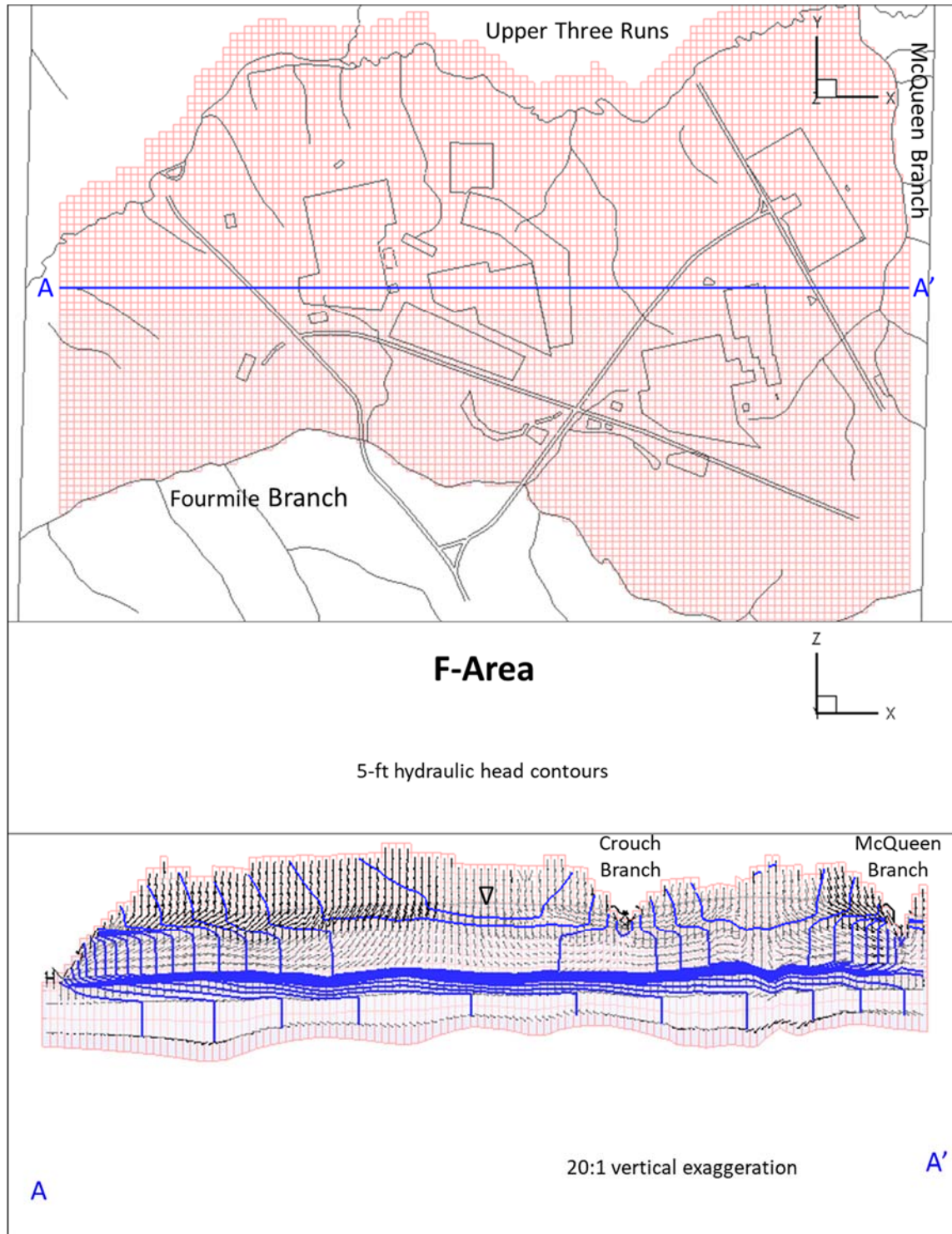


Figure 16. Enlarged view of Figure 15 east-west cross-section of GSA2018.LW model through F-Area; vectors are fixed length showing flow direction only.

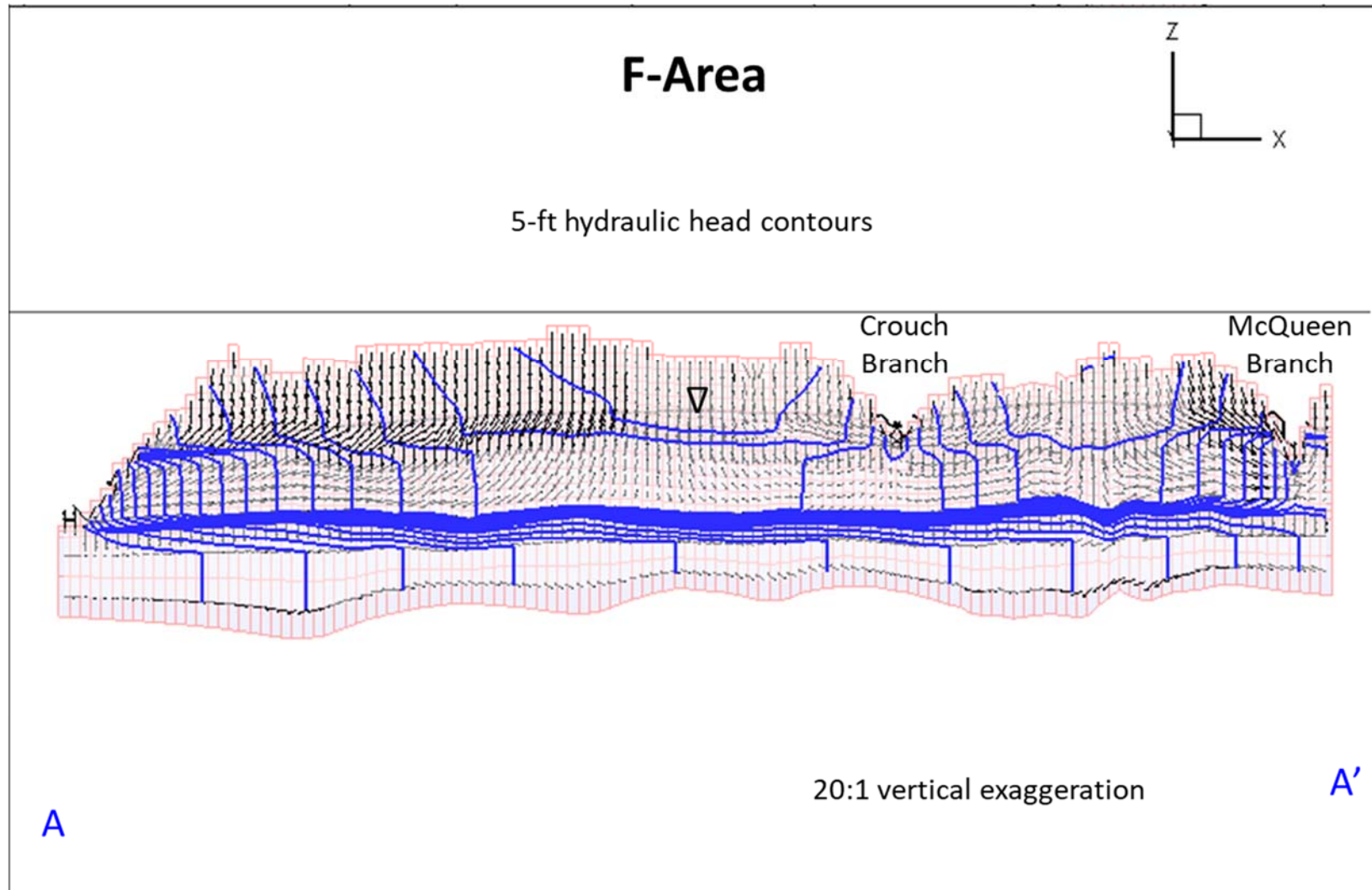


Figure 17. East-west cross-section of GSA2018.LW model through H-Area;
vectors are fixed length showing flow direction only.

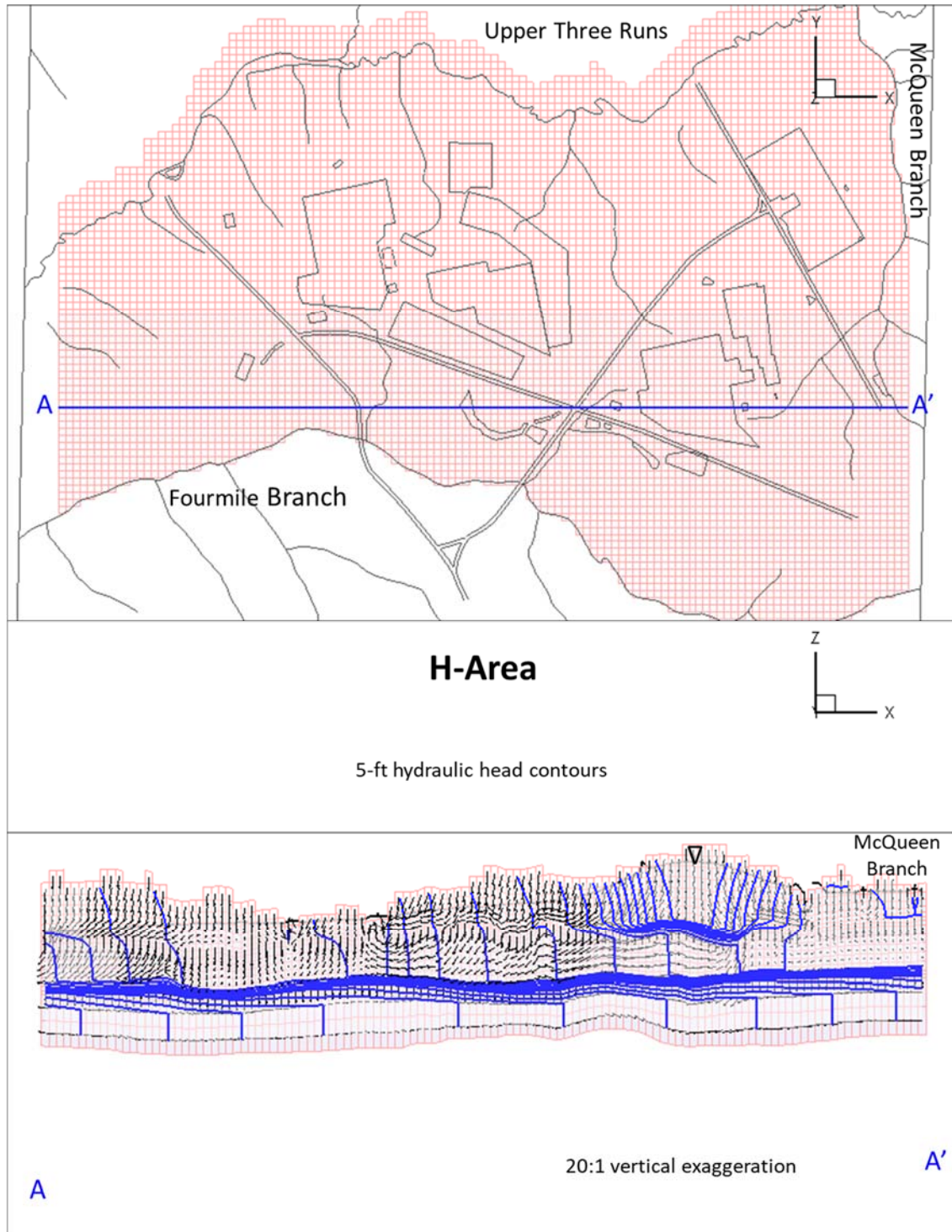


Figure 18. Enlarged view of Figure 17 east-west cross-section of GSA2018.LW model through H-Area; vectors are fixed length showing flow direction only.

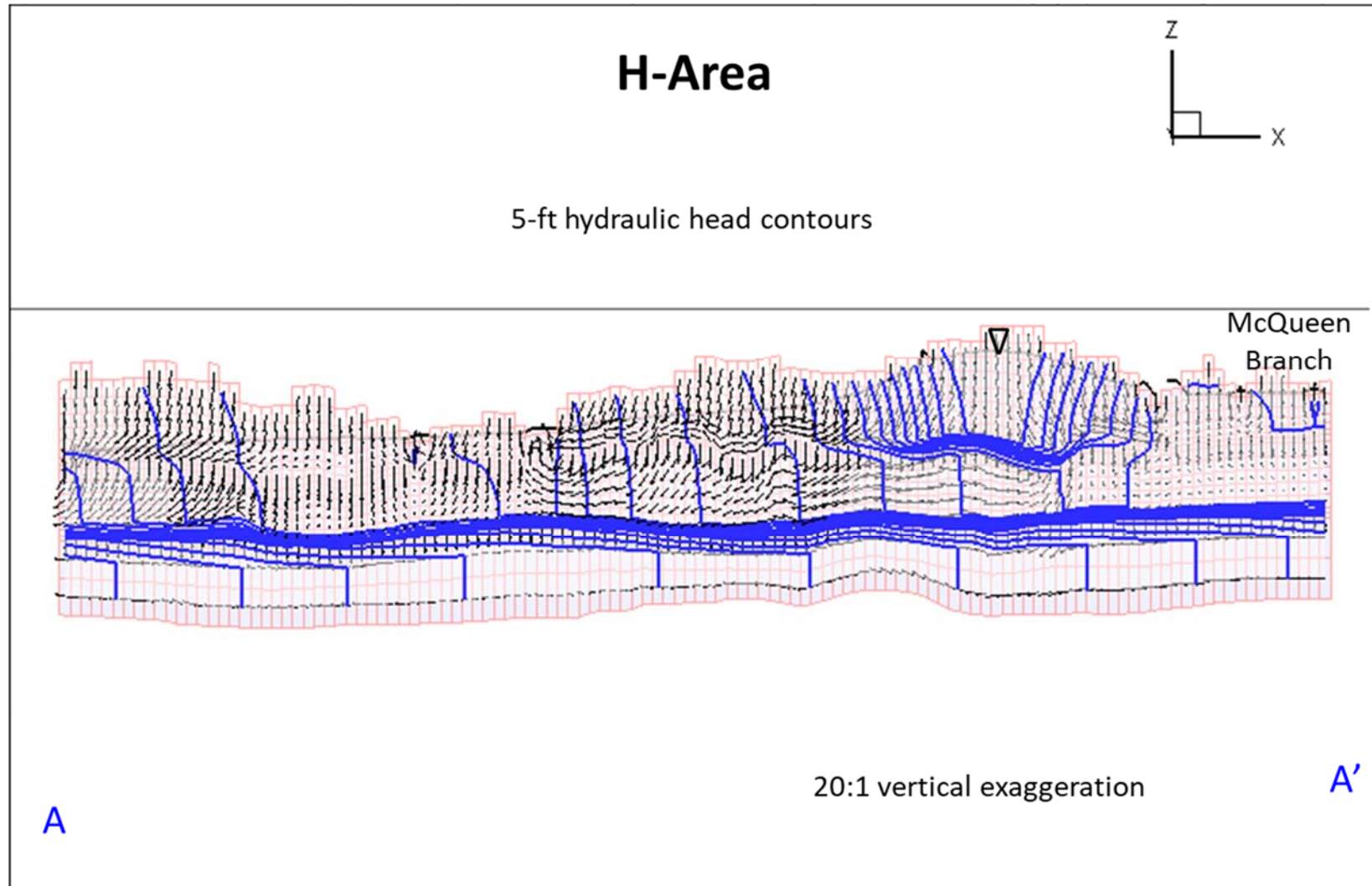


Figure 19. East-west cross-section of GSA2018.LW model through Z-Area; vectors are fixed length showing flow direction only.

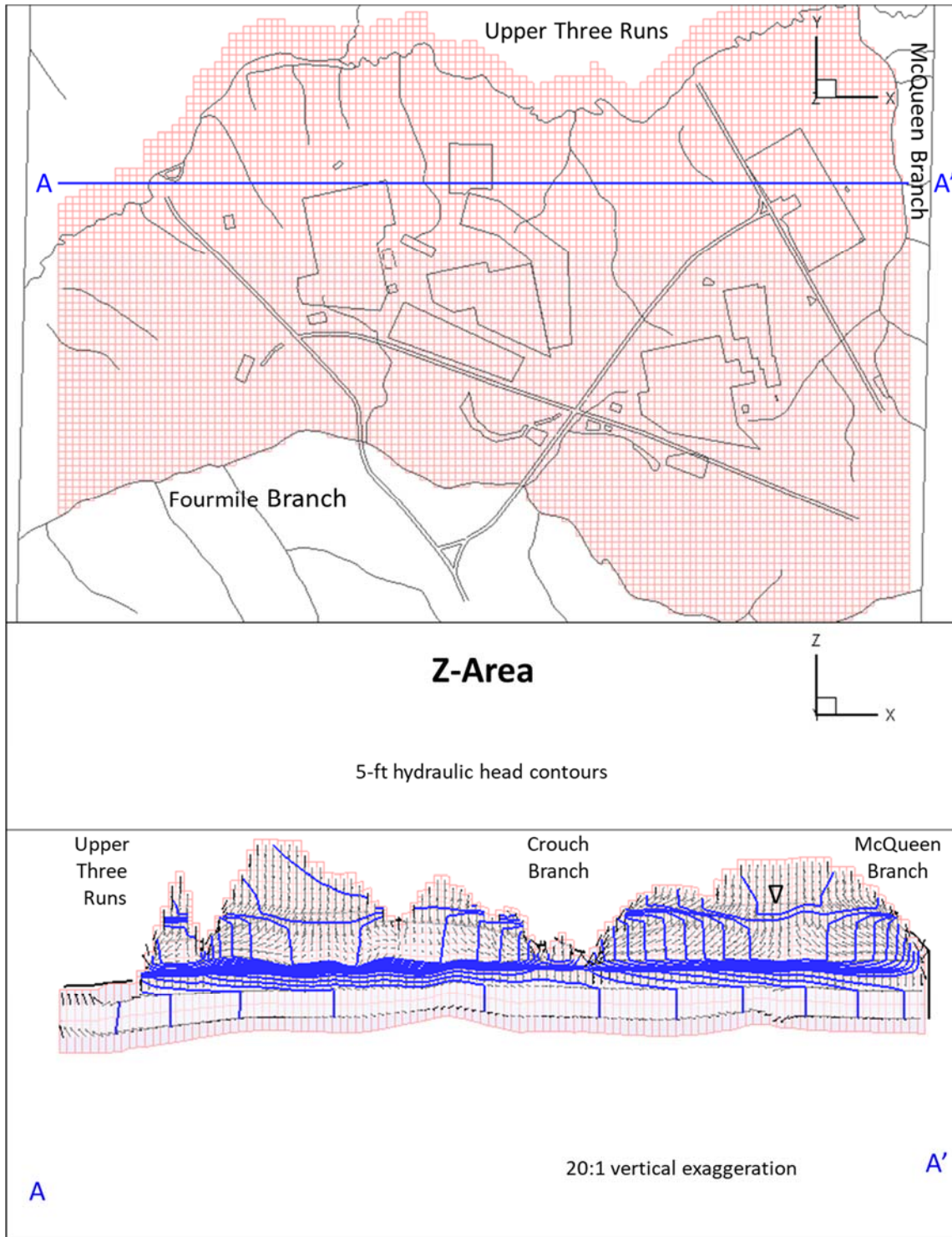
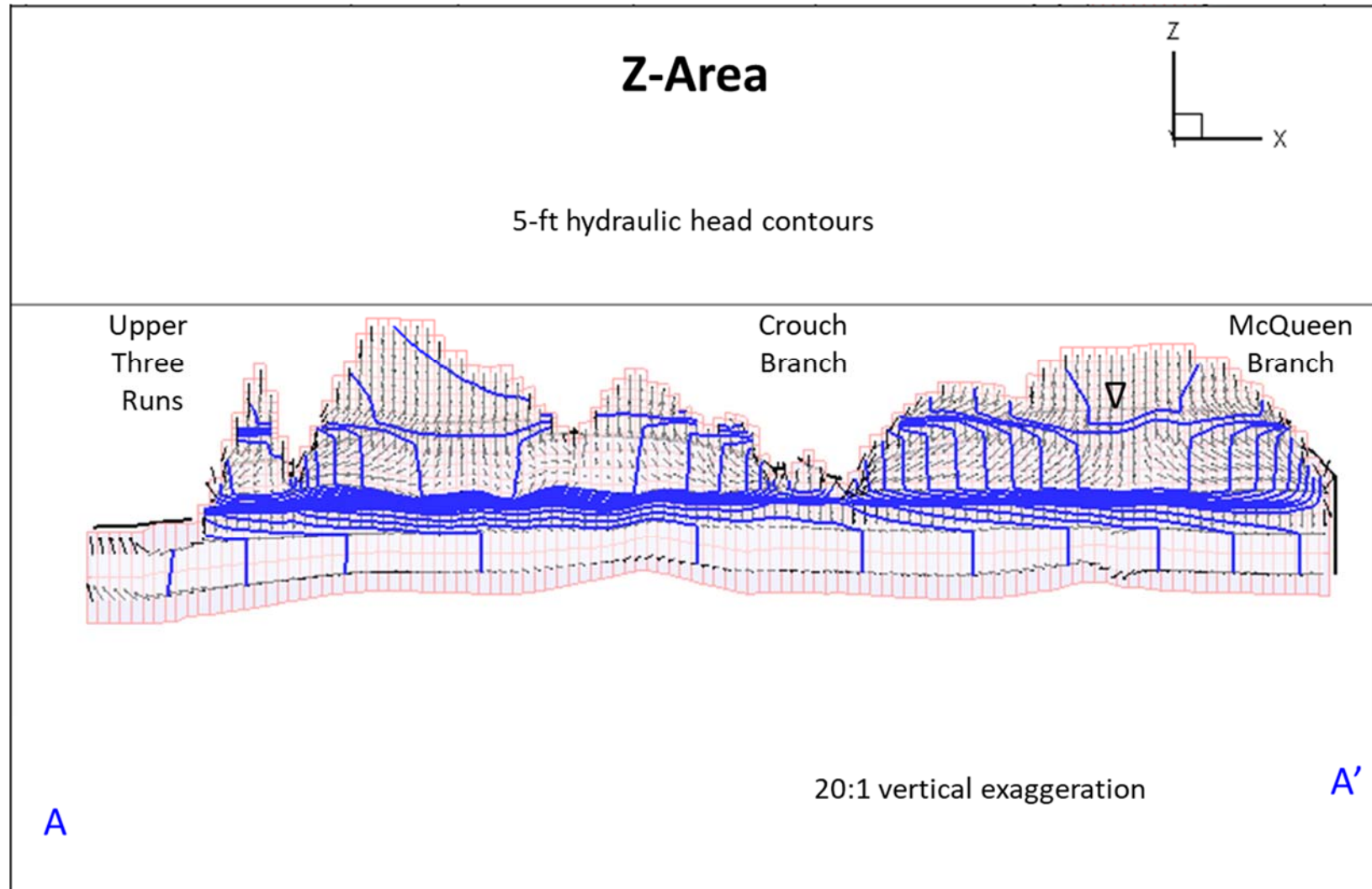


Figure 20. Enlarged view of Figure 19 east-west cross-section of GSA2018.LW model through Z-Area;
vectors are fixed length showing flow direction only.



If you have any questions, please contact me at 557-9900.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Larry B. Romanowski', with a stylized flourish at the end.

Larry B Romanowski
Manager, Closure and Disposal Determinations
Waste Disposal Authority

c:

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