

## Appendix C

### Calculations used in the conversion of detection limits given by the facility to pCi/m<sup>3</sup>

LANL:	Gross alpha	$(0.5\text{pCi/sample})(\text{sample}/2283\text{m}^3)$
	Gross beta	$(1.0\text{pCi/sample})(\text{sample}/2283\text{m}^3)$
	<sup>238</sup> Pu	$(0.04\text{ pCi/sample})(1\text{ sample}/6\text{--}7\text{ biweekly filters})(6.5\text{ filters} \times 2283\text{m}^3)$
	<sup>239</sup> Pu	$(0.04\text{ pCi/sample})(1\text{ sample}/6\text{--}7\text{ biweekly filters})(6.5\text{ filters} \times 2283\text{m}^3)$
	<sup>234</sup> U	$(0.04\text{ pCi/sample})(1\text{ sample}/6\text{--}7\text{ biweekly filters})(6.5\text{ filters} \times 2283\text{m}^3)$
	<sup>235</sup> U	$(0.04\text{ pCi/sample})(1\text{ sample}/6\text{--}7\text{ biweekly filters})(6.5\text{ filters} \times 2283\text{m}^3)$
	<sup>238</sup> U	$(0.04\text{ pCi/sample})(1\text{ sample}/6\text{--}7\text{ biweekly filters})(6.5\text{ filters} \times 2283\text{m}^3)$
	<sup>241</sup> Am	$(0.04\text{ pCi/sample})(1\text{ sample}/6\text{--}7\text{ biweekly filters})(6.5\text{ filters} \times 2283\text{m}^3)$ $(336\text{ hr/biweekly sample})(4\text{ ft}^3/\text{min})(60\text{ min/hr})(0.02831\text{m}^3/\text{ft}^3)=2283\text{ m}^3$
SRS:	N/A	Units given in pCi/m <sup>3</sup> by the facility
Hanford:	Gross alpha	$(2 \times 10^{-15}\text{ }\mu\text{Ci/mL})(1000\text{ mL/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	Gross beta	$(1.9 \times 10^{-14}\text{ }\mu\text{Ci/mL})(1000\text{ mL/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	<sup>90</sup> Sr	$(1.9 \times 10^{-14}\text{ }\mu\text{Ci/mL})(1000\text{ mL/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	Iso Pu:	$(2.0 \times 10^{-15}\text{ }\mu\text{Ci/mL})(1000\text{ mL/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	<sup>241</sup> Am:	$(1.9 \times 10^{-15}\text{ }\mu\text{Ci/mL})(1000\text{ mL/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	Iso U:	$(7.1 \times 10^{-15}\text{ }\mu\text{Ci/mL})(1000\text{ mL/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
Brookhaven:	N/A	Units given in pCi/m <sup>3</sup> by the facility
INEEL:	<sup>238</sup> Pu	$(8 \times 10^{-18}\text{ }\mu\text{Ci/cc})(1000\text{ cc/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	<sup>239+240</sup> Pu	$(8 \times 10^{-18}\text{ }\mu\text{Ci/cc})(1000\text{ cc/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	<sup>241</sup> Am	$(8 \times 10^{-18}\text{ }\mu\text{Ci/cc})(1000\text{ cc/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	<sup>90</sup> Sr	$(1 \times 10^{-16}\text{ }\mu\text{Ci/cc})(1000\text{ cc/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	<sup>234</sup> U	$(6 \times 10^{-18}\text{ }\mu\text{Ci/cc})(1000\text{ cc/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	<sup>235</sup> U	$(4 \times 10^{-18}\text{ }\mu\text{Ci/cc})(1000\text{ cc/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	<sup>238</sup> U	$(4 \times 10^{-18}\text{ }\mu\text{Ci/cc})(1000\text{ cc/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
NTS:	Gross alpha	$(1.8 \times 10^{-15}\text{ }\mu\text{Ci/mL})(1000\text{ mL/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	Gross beta	$(4.1 \times 10^{-15}\text{ }\mu\text{Ci/mL})(1000\text{ mL/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	<sup>238</sup> Pu	$(9.8\text{ or }6 \times 10^{-18}\text{ }\mu\text{Ci/mL})(1000\text{ mL/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	<sup>239+240</sup> Pu	$(10.6\text{ or }6 \times 10^{-18}\text{ }\mu\text{Ci/mL})(1000\text{ mL/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	<sup>7</sup> Be	$(2.1 \times 10^{-14}\text{ }\mu\text{Ci/mL})(1000\text{ mL/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
	<sup>3</sup> H	$(2.9 \times 10^{-12}\text{ }\mu\text{Ci/mL})(1000\text{ mL/liter})(1000\text{ liters/m}^3)(10^6\text{ pCi}/\mu\text{Ci})$
ORNL:	Gross alpha	$(2.25 \times 10^{-5}\text{ }\mu\text{Ci/year})(\text{min}/2\text{ ft}^3\text{ or min}/35\text{ ft}^3)(1\text{ yr}/365\text{ days})$ $(\text{day}/24\text{ hr})(\text{hr}/60\text{ min})(10^6\text{ pCi}/\mu\text{Ci})(35.31\text{ ft}^3/\text{m}^3)$
	Gross beta	$(6.54 \times 10^{-4}\text{ }\mu\text{Ci/year})(\text{min}/2\text{ ft}^3\text{ or min}/35\text{ ft}^3)(1\text{ yr}/365\text{ days})$ $(\text{day}/24\text{ hr})(\text{hr}/60\text{ min})(10^6\text{ pCi}/\mu\text{Ci})(35.31\text{ ft}^3/\text{m}^3)$
	<sup>234</sup> U	$(3.53 \times 10^{-4}\text{ }\mu\text{Ci/year})(\text{min}/2\text{ ft}^3\text{ or min}/35\text{ ft}^3)(1\text{ yr}/365\text{ days})$ $(\text{day}/24\text{ hr})(\text{hr}/60\text{ min})(10^6\text{ pCi}/\mu\text{Ci})(35.31\text{ ft}^3/\text{m}^3)$
	<sup>235</sup> U	$(3.76 \times 10^{-4}\text{ }\mu\text{Ci/year})(\text{min}/2\text{ ft}^3\text{ or min}/35\text{ ft}^3)(1\text{ yr}/365\text{ days})$ $(\text{day}/24\text{ hr})(\text{hr}/60\text{ min})(10^6\text{ pCi}/\mu\text{Ci})(35.31\text{ ft}^3/\text{m}^3)$
	<sup>238</sup> U	$(3.92 \times 10^{-4}\text{ }\mu\text{Ci/year})(\text{min}/2\text{ ft}^3\text{ or min}/35\text{ ft}^3)(1\text{ yr}/365\text{ days})$ $(\text{day}/24\text{ hr})(\text{hr}/60\text{ min})(10^6\text{ pCi}/\mu\text{Ci})(35.31\text{ ft}^3/\text{m}^3)$
	<sup>3</sup> H	$(1.56\text{ }\mu\text{Ci/year})(\text{min}/180\text{ cc})(1 \times 10^6\text{ cc/m}^3)(1\text{ yr}/365\text{ days})$ $(\text{day}/24\text{ hr})(\text{hr}/60\text{ min})(10^6\text{ pCi}/\mu\text{Ci})$

Berkeley:	Gross alpha	(10 pCi/ sample)(1 sample/month)(month/30.5 days)(day/24 hr) (hr/60 min)(min/2.1ft <sup>3</sup> )(1 ft <sup>3</sup> /2.832 x 10 <sup>-2</sup> m <sup>3</sup> )
	Gross beta	(8 pCi/sample)(1 sample/month)(month/30.5 days)(day/24 hr) (hr/60 min)(min/2.1ft <sup>3</sup> )(1 ft <sup>3</sup> /2.832 x 10 <sup>-2</sup> m <sup>3</sup> )
Sandia:	N/A	Units given in pCi/m <sup>3</sup> by the facility
Argonne:	Gross alpha	(0.3 fCi/m <sup>3</sup> )(10 <sup>-3</sup> pCi/fCi)
	Gross beta	(1fCi/m <sup>3</sup> )(10 <sup>-3</sup> pCi/fCi)
	<sup>238</sup> Pu	(1 aCi/m <sup>3</sup> )(10 <sup>-6</sup> pCi/aCi)
	<sup>239</sup> Pu	(1 aCi/m <sup>3</sup> )(10 <sup>-6</sup> pCi/aCi)
	<sup>234</sup> U	(1 aCi/m <sup>3</sup> )(10 <sup>-6</sup> pCi/aCi)
	<sup>238</sup> U	(1 aCi/m <sup>3</sup> )(10 <sup>-6</sup> pCi/aCi)
	<sup>232</sup> Th	(1 aCi/m <sup>3</sup> )(10 <sup>-6</sup> pCi/aCi)
	<sup>230</sup> Th	(1 aCi/m <sup>3</sup> )(10 <sup>-6</sup> pCi/aCi)
	<sup>228</sup> Th	(1 aCi/m <sup>3</sup> )(10 <sup>-6</sup> pCi/aCi)
	<sup>90</sup> Sr:	(10 aCi/m <sup>3</sup> )(10 <sup>-6</sup> pCi/aCi)
Pantex:	<sup>238</sup> Pu	(.05 pCi/composite)(1 composite/month)(min/40 ft <sup>3</sup> )(month/43,200min)(35.31 ft <sup>3</sup> /m <sup>3</sup> )
	<sup>239</sup> Pu	(.05 pCi/composite)(1 composite/month)(min/40 ft <sup>3</sup> )(month/43,200min)(35.31 ft <sup>3</sup> /m <sup>3</sup> )
	<sup>234</sup> U	(.05 pCi/composite)(1 composite/month)(min/40 ft <sup>3</sup> )(month/43,200min)(35.31 ft <sup>3</sup> /m <sup>3</sup> )
	<sup>238</sup> U	(.05 pCi/composite)(1 composite/month)(min/40 ft <sup>3</sup> )(month/43,200min)(35.31 ft <sup>3</sup> /m <sup>3</sup> )
	<sup>232</sup> Th	(.05 pCi/composite)(1 composite/month)(min/40 ft <sup>3</sup> )(month/43,200min)(35.31 ft <sup>3</sup> /m <sup>3</sup> )
	<sup>3</sup> H	(0.5 dpm/mL)(2.2pCi/dpm)(1000 mL/L)(1 L/m <sup>3</sup> )
LLNL:	Gross alpha	(12 pCi/filter)(1 filter/wk)(1 wk/168hr)(hr/60 min)(min/35 ft <sup>3</sup> or min/1 ft <sup>3</sup> )(35.31 ft <sup>3</sup> /m <sup>3</sup> )
	Gross beta	(20 pCi/filter)(1 filter/wk)(1 wk/168hr)(hr/60 min)(min/35 ft <sup>3</sup> or min/1 ft <sup>3</sup> )(35.31 ft <sup>3</sup> /m <sup>3</sup> )
	<sup>238</sup> Pu	(1.7 x 10 <sup>-2</sup> pCi/filter)(1 filter/wk)(1 wk/168hr)(hr/60 min)(min/35 ft <sup>3</sup> or min/1 ft <sup>3</sup> )(35.31 ft <sup>3</sup> /m <sup>3</sup> )
	<sup>239+240</sup> Pu	(3.06 x 10 <sup>-3</sup> pCi/filter)(1 filter/wk)(1 wk/168hr)(hr/60 min)(min/35 ft <sup>3</sup> or min/1 ft <sup>3</sup> )(35.31 ft <sup>3</sup> /m <sup>3</sup> )
	<sup>235</sup> U	(1.43 x 10 <sup>-2</sup> µg/filter) (2.2 x 10 <sup>-3</sup> mCi/g)(10 <sup>9</sup> pCi/mCi)(g/10 <sup>6</sup> µg) (1 filter/wk.)(1 wk./168hr)(hr/60 min)(min/35 ft <sup>3</sup> or min/1 ft <sup>3</sup> )(35.31 ft <sup>3</sup> /m <sup>3</sup> )
	<sup>238</sup> U	(2µg/filter)(3.3 x 10 <sup>-4</sup> mCi/g)(10 <sup>9</sup> pCi/mCi)(g/10 <sup>6</sup> µg)(1 filter/wk) (1 wk/168hr)(hr/60 min)(min/35 ft <sup>3</sup> or min/1 ft <sup>3</sup> )(35.31 ft <sup>3</sup> /m <sup>3</sup> )
WIPP:	Gross alpha	(2 x 10 <sup>-10</sup> µCi/m <sup>3</sup> )(10 <sup>6</sup> pCi/µCi)
	Gross beta	(2 x 10 <sup>-10</sup> µCi/m <sup>3</sup> )(10 <sup>6</sup> pCi/µCi)
Rocky Flats:	<sup>234</sup> U	(1 x 10 <sup>-4</sup> µg/m <sup>3</sup> )(1.0g/10 <sup>6</sup> µg)(6.18 mCi/g)(10 <sup>9</sup> pCi/mCi)
	<sup>233</sup> U	(1 x 10 <sup>-4</sup> µg/m <sup>3</sup> )(1.0g/10 <sup>6</sup> µg)(9.47 mCi/g)(10 <sup>9</sup> pCi/mCi)
	<sup>235</sup> U	(1 x 10 <sup>-4</sup> µg/m <sup>3</sup> )(1.0g/10 <sup>6</sup> µg)(2.2 x 10 <sup>-3</sup> mCi/g)(10 <sup>9</sup> pCi/mCi)
	<sup>238</sup> U	(1 x 10 <sup>-4</sup> µg/m <sup>3</sup> )(1.0g/10 <sup>6</sup> µg)(3.3 x 10 <sup>-4</sup> mCi/g)(10 <sup>9</sup> pCi/mCi)
	<sup>241</sup> Am	(5 x 10 <sup>-6</sup> µg/m <sup>3</sup> )(1.0g/10 <sup>6</sup> µg)(3.24 x 10 <sup>3</sup> mCi/g)(10 <sup>9</sup> pCi/mCi)
	<sup>241</sup> Am	(3 x 10 <sup>-6</sup> µg/m <sup>3</sup> )(1.0g/10 <sup>6</sup> µg)( 3.24 x 10 <sup>3</sup> mCi/g)(10 <sup>9</sup> pCi/mCi)
	<sup>239</sup> Pu	(5 x 10 <sup>-6</sup> µg/m <sup>3</sup> )(1.0g/10 <sup>6</sup> µg)(61.3 mCi/g)(10 <sup>9</sup> pCi/mCi)
	<sup>239</sup> Pu	(3 x 10 <sup>-6</sup> µg/m <sup>3</sup> )(1.0g/10 <sup>6</sup> µg)(61.3 mCi/g)(10 <sup>9</sup> pCi/mCi)
	<sup>240</sup> Pu	(5 x 10 <sup>-6</sup> µg/m <sup>3</sup> )(1.0g/10 <sup>6</sup> µg)(2.26 x 10 <sup>2</sup> mCi/g)(10 <sup>9</sup> pCi/mCi)
	<sup>240</sup> Pu	(3 x 10 <sup>-6</sup> µg/m <sup>3</sup> )(1.0g/10 <sup>6</sup> µg)( 2.26 x 10 <sup>2</sup> mCi/g)(10 <sup>9</sup> pCi/mCi)
	<sup>3</sup> H	Precipitation only; no conversion to air volume

Mound:	<sup>238</sup> Pu	$(10^{-18} \mu\text{Ci/mL})(1000 \text{ mL/liter})(1000 \text{ liters/m}^3)(10^6 \text{ pCi}/\mu\text{Ci})$
	<sup>228</sup> Th	$(10^{-18} \mu\text{Ci/mL})(1000 \text{ mL/liter})(1000 \text{ liters/m}^3)(10^6 \text{ pCi}/\mu\text{Ci})$
	<sup>232</sup> Th	$(10^{-18} \mu\text{Ci/mL})(1000 \text{ mL/liter})(1000 \text{ liters/m}^3)(10^6 \text{ pCi}/\mu\text{Ci})$
	<sup>3</sup> H	$(20 \times 10^{-12} \mu\text{Ci/mL})(1000 \text{ mL/liter})(1000 \text{ liters/m}^3)(10^6 \text{ pCi}/\mu\text{Ci})$
Fernald:	Th	$(0.4 \text{ pCi/ filter})(1 \text{ filter}/2 \text{ weeks})(2 \text{ weeks}/20,160 \text{ min})(\text{min}/45 \text{ ft}^3)(35.31 \text{ ft}^3/\text{m}^3)$
Knolls:	Gross alpha	$(1 \times 10^{-15} \mu\text{Ci/mL})(1000 \text{ mL/liter})(1000 \text{ liters/m}^3)(10^6 \text{ pCi}/\mu\text{Ci})$
	Gross beta	$(5 \times 10^{-15} \mu\text{Ci/mL})(1000 \text{ mL/liter})(1000 \text{ liters/m}^3)(10^6 \text{ pCi}/\mu\text{Ci})$
Bettis:	Gross alpha	$(2 \times 10^{-16} \mu\text{Ci/mL})(1000 \text{ mL/liter})(1000 \text{ liters/m}^3)(10^6 \text{ pCi}/\mu\text{Ci})$
	Gross beta	$(4 \times 10^{-16} \mu\text{Ci/mL})(1000 \text{ mL/liter})(1000 \text{ liters/m}^3)(10^6 \text{ pCi}/\mu\text{Ci})$