

APPENDIX 8

LIST OF DOCUMENTS SUBMITTED FOR THE ADMINISTRATIVE RECORD AS PART OF THE REVISED TFI PETITION

The following is a list of the documents cited in the TFI Petition, the Appendices and Attachments to the Petition. The Administrative Record also includes the Petition, Appendices, and Attachments thereto. If any document cited is not on this list, it is inadvertent and the intent is to include all such documents in the Administrative Record.

Documents Cited in Petition

(Formatted as the document appears in the Petition)

Texas Department of Transportation, Technical Advisory, Fly Ash Supply Update (updated 2019), available at http://ftp.dot.state.tx.us/pub/txdot/mtd/ta/fly_ash_condensed.pdf.

Danny L. Gray, Decrease in Fly Ash Spurring Innovation Within Construction Materials Industry, Vol. 35, Issue 6, Special Issue: Annual Outlook Issue (Jan. 2019), available at <https://onlinelibrary.wiley.com/doi/pdf/10.1002/gas.22099>.

Letter from Jeffrey R. Holmstead, Assistant Administrator of the Office of Air and Radiation, to Michael Lloyd, Jr., Research Director Chemical Processing, Re: FIPR Petition (December 22, 2004).

EPA, Risk Assessment Guidance for Superfund: Volume III - Part A, Process for Conducting Probabilistic Risk Assessment, EPA 540-R-02-002, 7-1 (2001), available at https://www.epa.gov/sites/production/files/2015-09/documents/rags3adt_complete.pdf.

Interstate Technology Regulatory Council (ITRC), Decision Making at Contaminated Sites, Issues and Options in Human Health Risk Assessment, 6.1.1 (2015), available at https://www.itrcweb.org/risk-3/Default.htm#6.%20Exposure%20Assessment.htm#6.1_Determining_Appropriate_Exposure_Factors%3FTocPath%3D6.%2520Exposure%2520Assessment%7C6.1%2520%2520Determining%2520Appropriate%2520Exposure%2520Factors%2520%7C_0.

EPA, Exposure Factors Handbook 2011 Edition (Final Report), EPA/600/R-09/052F (2011), available at <https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252>.

B. Birky, J. Hilton, & AE J. Johnston, Phosphogypsum: Sustainable Management and Use, International Fertilizer Association, Chp 5, 52-63 (2016), available for purchase at <https://www.fertilizer.org/ItemDetail?iProductCode=10012Hardcopy&Category=ENV> (IFIA Sustainable PG Management Report).

EPA, Potential Uses of Phosphogypsum and Associated Risks, Background Information Document, 402-R92-002, 4-26-4-35 (May 1992), *available at* <https://www.epa.gov/sites/production/files/2015-07/documents/0000055v.pdf> (1992 EPA BID).

EPA, Coal Ash Reuse, How is the Beneficial Use of Coal Ash Currently Regulated? (last updated July 15, 2019), *available at* <https://www.epa.gov/coalash/coal-ash-reuse>.

Federal Highway Administration, Tech Brief, Bases and Subbases for Concrete Pavements (revised), FHWA-HIF-16-005 (August 2017), *available at* <https://www.fhwa.dot.gov/pavement/concrete/pubs/hif16005.pdf>.

Federal Highway Administration, User Guidelines for Waste and Byproduct Materials in Pavement Construction, Coal Fly Ash, FHWA-RD-97-148, *available at* <https://www.fhwa.dot.gov/publications/research/infrastructure/pavements/97148/016.cfm>.

Louisiana Department of Transportation & Development, Louisiana Standard Specifications For Roads And Bridges, 123 (2016), *available at* [http://www.sp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Standard_Specifications/Standard%20Specifications/2016%20Standard%20Specifications%20for%20Roads%20and%20Bridges%20Manual/00%20-%202016%20-%20Standard%20Specification%20\(complete%20manual\).pdf](http://www.sp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Standard_Specifications/Standard%20Specifications/2016%20Standard%20Specifications%20for%20Roads%20and%20Bridges%20Manual/00%20-%202016%20-%20Standard%20Specification%20(complete%20manual).pdf).

North Carolina Department of Transportation, Standard Specifications for Roads and Structures, 1-43, Section 104-12 (2018) *available at* <https://connect.ncdot.gov/resources/Specifications/StandSpecLibrary/2018%20Standard%20Specifications%20for%20Roads%20and%20Structures.pdf>.

Idaho Transportation Department, 2018 Standard Specifications for Highway Construction (2018), *available at* <https://apps.itd.idaho.gov/apps/manuals/SpecBook/SpecBook18.pdf>.

Federal Highway Administration, Recycled Roadways, FHWA-HRT-05-003 (Jan/Feb 2005), *available at* <https://www.fhwa.dot.gov/publications/publicroads/05jan/02.cfm>.

AASHTO, Center for Environmental Excellence, The Growing Need for and Importance of Waste Minimization and Recycling, subchp. 3.12.1, *available at* https://environment.transportation.org/environmental_issues/construct_maint_prac/compendium/manual/3_12.aspx.

Idaho Transportation Department, Quality Assurance Manual, §230.02.02 (2019), *available at* <https://apps.itd.idaho.gov/Apps/manuals/ManualsOnline.html>.

Federal Highway Administration, Highway History, The Size of the Job, *available at* <https://www.fhwa.dot.gov/infrastructure/50size.cfm>.

Amin Abdelrahman & Mohamad H. Aboud, Determination of Optimum Quantity of Raw Gypsum Addition for Atbara Cement Clinker, Khartoum University, *available at* <http://www.jeaconf.org/UploadedFiles/Document/82d8a051-43ad-44fa-ab1d-1ac182000608.pdf>.

Karen L. Scrivener, Vanderley M. John, & Ellis M. Gartner, Eco-efficient cements: Potential economically viable solutions for a low-CO₂ cement-based materials industry, *Cement and Concrete Research*. Vol. 114, 2-26 (Dec. 2018), *available at* <https://www.sciencedirect.com/science/article/pii/S0008884618301480?via%3Dihub>.

Kuriakose Reju & P.K. Shaji, Effect Of Calcined Phosphogypsum In Portland Pozzolana Cement Concrete, *International Research Journal of Engineering and Technology (IRJET)* Vol. 05, Issue: 04, 2008 (Apr. 2018), *available at* <https://pdfs.semanticscholar.org/d7cc/03c3de65ca412971fff244b37098d479d4ab.pdf>.

TFI, Supplement to the October 11, 2019 TFI Phosphogypsum Reuse Petition: 2019 Radium-226 Results for U.S. Phosphogypsum Stacks, 1 (December 5, 2019).
EPA, Applying to EPA for Approval of Other Uses of Phosphogypsum: Preparing and Submitting a Complete Petition Under 40 CFR 61.206: A Workbook, (2005) *available at* https://www.epa.gov/sites/production/files/2015-05/documents/wrkbk_sub-r_appl_1105.pdf.

Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 7th Ed.(2018), *available for purchase at* <https://store.transportation.org/item/collectiondetail/180?AspxAutoDetectCookieSupport=1> (the Green Book).

EPA, EPA Land Use in the CERCLA Remedy Selection Process, OSWER Dir. No. 9355.7-04 (May 25, 1995), *available at* <https://www.epa.gov/sites/production/files/documents/landuse.pdf>.

EPA, Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions, OSWER DIRECTIVE 9355.0-30, 2 (Apr. 22, 1991), *available at* <https://www.epa.gov/sites/production/files/2015-11/documents/baseline.pdf>.

Louisiana State University, Preparation of an Application for Approval to Use Stabilized Phosphogypsum as a Fill Material For Coastal Protection Devices, Final Report, Pub. No. 01-197-235 (Apr. 2010), *available at* <http://fipr.state.fl.us/wp-content/uploads/2014/12/01-197-235Final.pdf>.

International Atomic Energy Agency (IAEA), Radiation Protection and Management of NORM Residues in the Phosphate Industry, Safety Reports Series No. 78 (2013), *available at* https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1582_web.pdf.

EPA, Comments and Response to Comments, NESHAP, National Emission Standards for Radon Emissions from Phosphogypsum Stacks, EPA-402-R-98-007, 3 (1998).

EPA holds meeting about Mississippi Phosphate Site, St. Louis Post-Dispatch, Jan. 11, 2018, available at https://www.stltoday.com/news/world/epa-holds-meeting-about-mississippi-phosphate-site/html_0a41e1fa-96ef-54bb-a825-8fcaeb4b4463.html.

EPA, Report to Congress, Evaluation of EPA's Guidelines for Exposures to Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM), 15 (June 2000), available at <https://www.epa.gov/sites/production/files/2015-04/documents/402-r-00-001.pdf>.

International Commission on Radiological Protection (ICRP), The 2007 Recommendations of the International Commission on Radiological Protection, ICRP Publication 103, 55, 87 (2007), available at <https://www.icrp.org/publication.asp?id=ICRP%20Publication%20103>.

ICRP, Optimization and Decision Making in Radiological Protection, ICRP Publication 55 (1990), available at <https://www.icrp.org/publication.asp?id=ICRP%20Publication%2055>.

ICRP, Managing Patient Dose in Computed Tomography, ICRP Publication 87 (2000), available at <https://www.icrp.org/publication.asp?id=ICRP%20Publication%2087>.

EPA, EPA Radiogenic Cancer Risk Models and Projections for the U.S. Population, EPA 402-R-11-001 (April 2011), available at <https://www.epa.gov/radiation/epa-radiogenic-cancer-risk-models-and-projections-us-population>.

National Council on Radiation Protection and Measurements, Management of Exposure to Ionizing Radiation: Radiation Protection Guidance for the United States, NCRP Report No. 180 (2018), available for purchase at <https://ncrponline.org/shop/reports/report-no-180-management-of-exposure-to-ionizing-radiation-radiation-protection-guidance-for-the-united-states-2018-2018/>.

Official Journal of the European Union, Council Directive 2013/59/Euratom, 5 (Dec. 5, 2013), available at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2014:013:FULL&from=EN.L.13/2.COUNCIL.DIRECTIVE.2013/59/EURATOM>.

Memorandum from TFI to Lee Veal, Director, Radiation Protection Division, U.S. Environmental Protection Agency (April 24, 2019).

Abandoned Stretch of Turnpike in PA, ConstructionEquipmentGuide.com, Jan. 11, 2006, available at <https://www.constructionequipmentguide.com/redirect/6495?story=6495>.

James J. Fazzalano, Local Road Abandonment and Abutting Property Owners, OLR Research Report, 2003-R-0897 (December 24, 2003), available at <https://www.cga.ct.gov/2003/olrdata/tra/rpt/2003-R-0897.htm>.

Florida Office of the Attorney General, Counties, roads and streets, dedication, vacation, Advisory Legal Opinion – AGO 78-118 (Sep. 27, 1978), available at <http://www.myfloridalegal.com/ago.nsf/Opinions/1F43FA7B5F1C0AF18525659300627D32>

Association of County Commissions of Alabama, Acceptance, Annexation and Vacation of County Roads (May 11, 2016), *available at* https://www.alabamacounties.org/sdm_downloads/creation-acceptance-annexation-and-vacation-of-county-roads/.

Thomas Ruppert, Erin Deady, Jason M. Evans, & Crystal Goodson, Legal Issues When Managing Public Roads Affected by Sea Level Rise: Florida, 5 (Spring 2019), *available at* https://www.researchgate.net/publication/332528839_Legal_Issues_When_Managing_Public_Roads_Affected_by_Sea_Level_Rise_Florida.

EPA, Reuse Assessments: A Tool To Implement The Superfund Land Use Directive, OSWER 9355.7-06P (June 4, 2001), *available at* <https://nepis.epa.gov>.

SENES Consultants Limited, Application for Exemption – For Use of PG in the Construction of Thornhill Road, Polk County Florida (Draft), Prepared for the Florida Institute of Phosphate Research (1997).

EPA, A Guide to the Biosolids Risk Assessments for the EPA Part 503 Rule, EPA/832-B-93-005 (1995), *available at* <https://www.epa.gov/sites/production/files/2018-11/documents/guide-biosolids-risk-assessments-part503.pdf>.

Florida Department of Transportation, Standard Specifications For Road and Bridge Construction, 131 (July 2020), *available at* https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/programmanagement/implemented/specbooks/jul2020/7-20ebook.pdf?sfvrsn=c1f3424e_4.

The National Academies of Science, Assessing and Managing the Ecological Impacts of Paved Roads (2005), *available at* <https://www.nap.edu/catalog/11535/assessing-and-managing-the-ecological-impacts-of-paved-roads>.

Idaho Transportation Department, Impacts of Using Salt and Salt Brine for Roadway Deicing, RP 231 (2014), *available at* <https://www.ctcandassociates.com/work-samples/saltimpacts.pdf>.

USDA, Reclaimed Materials and Their Application in Road Construction: A Condensed Guide for Road Managers (December 2013), *available at* <https://www.fs.fed.us/t-d/pubs/pdfpubs/pdf12771807/pdf12771807dpi72.pdf>.

Roadex Network, Environmental Issues on Low Volume Roads, *available at* <https://www.roadex.org/e-learning/lessons/environmental-considerations-for-low-volume-roads/preface-environmental/>.

Florida Department of Transportation, Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (Draft), Chapter 4 (2018), *available*

at <https://www.fdot.gov/roadway/floridagreenbook/fgb.shtm> (Commonly known as the Florida Greenbook).

Institute of Medicine, Environmental Decisions in the Face of Uncertainty, Box 2-1 (2013), available at

https://www.ncbi.nlm.nih.gov/books/NBK200844/box/box_2_1/?report=objectonly.

National Research Council, Science and Judgment in Risk Assessment, 65 (1994), available at http://www.nap.edu/openbook.php?record_id=2125&page=65.

General Accounting Office, Use of Precautionary Assumptions in Health Risk Assessments and Benefits Estimates, GAO-01-55, 7 (October 2000), available at

<https://www.gao.gov/products/GAO-01-55>.

EPA, Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors, OSWER Directive 9200.1-120 (Feb. 6, 2014), available at

https://www.epa.gov/sites/production/files/2015-11/documents/oswer_directive_9200.1-120_exposurefactors_corrected2.pdf.

IAEA, Governmental, Legal and Regulatory Framework for Safety, 7 (2016), available at

<https://www.iaea.org/publications/10883/governmental-legal-and-regulatory-framework-for-safety>.

UNSCEAR, Report of the United Nations Scientific Committee on the Effects of Atomic Radiation, 8 and n. 17 (2010), available at

https://www.unscear.org/docs/reports/2010/UNSCEAR_2010_Report_M.pdf.

Nuclear Regulatory Commission, Advisory Committee on the Medical Uses of Isotopes (ACMUI), Report on the Hormesis/Linear No-Threshold Petitions, 1 (October 14, 2015), available at

<https://www.nrc.gov/docs/ML1528/ML15287A494.pdf>.

EPA, Advancing Sustainable Materials Management: 2016 Recycling Economic Information (REI) Report, EPA 530-R-17-002, 2 (2016), available at

https://www.epa.gov/sites/production/files/2017-05/documents/final_2016_rei_report.pdf.

EPA, Frequent Questions about Beneficial Use of Coal Combustion residuals (CCR) (last updated March 26, 2019), available at <https://www.epa.gov/coalash/frequent-questions-about-beneficial-use-coal-ash>.

EPA, Coal Combustion Residual Beneficial Use Evaluation: Fly Ash Concrete and FGD Gypsum Wallboard, 5-25 (Feb. 2014), available at

https://www.epa.gov/sites/production/files/2014-12/documents/ccr_bu_eval.pdf.

EPA, What kinds of consumer products contain radioactive materials (last updated on September 19, 2019), available at <https://www.epa.gov/radiation/what-kinds-consumer-products-contain-radioactive-materials>.

U.S. Nuclear Regulatory Agency, Natural Background Sources (last updated October 2, 2017), available at <https://www.nrc.gov/about-nrc/radiation/around-us/sources/nat-bg-sources.html#terr>.

Transportation Development Foundation, The Economic Impacts of Prohibiting Coal Fly Ash Use in Transportation Infrastructure Construction (Sept. 2011), available at <https://www.artba.org/wp-content/uploads/2017/06/study2011flyash.pdf>.

Presidential Executive Order on Reducing Regulation and Controlling Regulatory Costs, Executive Order 13771 (Jan. 31, 2017).

Presidential Executive Order on Buy American and Hire American, Executive Order 13788 (April 18, 2017).

Presidential Executive Order on Establishment of Office of Trade and Manufacturing Policy, Executive Order 13797 (April 29, 2017).

Documents Cited in Appendix 2: Radiological Risk Assessment in Support of Petition for Beneficial Use of Phosphogypsum
(Formatted as the document appears in Appendix 2)

International Atomic Energy Agency, Radiation Protection and Management of NORM Residues in the Phosphate Industry, Safety Report Series No. 78, IAEA, Vienna, 2013, p. 165, available at <https://www.iaea.org/publications/8947/radiation-protection-and-management-of-norm-residues-in-the-phosphate-industry>.

International Commission on Radiological Protection, The 2007 Recommendations of the International Commission on Radiological Protection, ICRP Publication No. 103, March 2007, p. 55, 87, Table 5 - p. 97, Table 8 - p. 116, 7, available at <https://www.icrp.org/publication.asp?id=ICRP%20Publication%20103>.

National Residential Radon Survey (NRRS) carried out by the U.S. Environmental Protection Agency (EPA). The NRRS is reported in the following EPA documents:

- U.S. EPA/Office of Radiation Programs. 1991a. National Residential Radon Survey, Statistical Analysis, National and Regional Estimates, Volume I. Available by request from Arcadis.
- U.S. EPA/Office of Radiation Programs. 1991b. National Residential Radon Survey, Summary of Questionnaire Data, Volume II. Available by request from Arcadis.

The data is also summarized in the following:

- Marcinowski F., Lucas R., Yeager W., National and Regional Distributions of Airborne Radon Concentrations in U.S. Homes, *Healthy Phys.* 66(6):669-706; 1994. Available by request from Arcadis.

National Council on Radiation Protection and Measurements (NCRP). NCRP Report No. 160, Ionizing Radiation Exposure of the Population of the United States, September 2019, *available for purchase at* <https://ncrponline.org/publications/reports/ncrp-report-160/>.

ICRP, 2010. Lung Cancer Risk from Radon and Progeny and Statement on Radon. ICRP Publication 115, *Ann. ICRP* 40(1) *available at* <https://www.icrp.org/publication.asp?id=ICRP%20Publication%20115>.

Chauhan, R.P. and Amit Kumar, 2015. A Comparative Study of Indoor Radon Contributed by Diffusive and Advective Transport Through Intact Concrete. *Physics Procedia* 80 (2015) 109 – 112, *available at* <https://www.sciencedirect.com/science/article/pii/S1875389215015837>.

Darby, S., D. Hill, A. Auvinen, J.M. Barros-Dios et al. 2004. Radon in Homes and Risk of Lung Cancer: Collaborative Analysis of Individual Data from 13 European Case-control Studies. *BMJ* 21 Dec, *available at* <https://www.bmj.com/content/bmj/330/7485/223.full.pdf>.

International Commission on Radiation Protection (ICRP). 2014. Annals of the ICRP, ICRP Publication 126 Radiological Protection against Radon Exposure. Volume 43 No.3, *available at* <https://www.icrp.org/publication.asp?id=ICRP%20Publication%20126>.

International Commission on Radiation Protection (ICRP). 1995. Annals of the ICRP, Age-dependent Doses to the Members of the Public from Intake of Radionuclides - Part 5 Compilation of Ingestion and Inhalation Coefficients. ICRP Publication 72. *Ann. ICRP* 26 (1). 1995, *available at* <https://www.icrp.org/publication.asp?id=ICRP%20Publication%2072>.

International Commission on Radiation Protection (ICRP). 1991. Annals of the ICRP, 1990 Recommendations of the International Commission on Radiological Protection. ICRP Publication 60. *Ann. ICRP* 21 (1-3) 1991, *available at* <https://www.icrp.org/publication.asp?id=ICRP%20Publication%2060>.

Kitto, M.E., & Perazzo, E., 2010. Experimental Determination of the Effectiveness of Radon Barriers, *available at* https://pdfs.semanticscholar.org/6d4d/5d5be46e9c06c4d2224c9e62a97f2ef5b6cd.pdf?_ga=2.29031359.269341046.1585241546-148410091.1569774325.

National Council on Radiation Protection and Measurements (NCRP). NCRP Report No.180, Management of Exposure to Ionizing Radiation: Radiation Protection Guidance for the United States, December 2018, p. 42, *available for purchase at* <https://ncrponline.org/shop/reports/report-no-180-management-of-exposure-to-ionizing-radiation-radiation-protection-guidance-for-the-united-states-2018-2018/>.

Rogers, et al. 1994. Radon Generation and Transport Through Concrete Foundations. USEPA Research and Development EPA/600/SR-94/175. November 1994, *available at* <https://nepis.epa.gov/Exe/ZyPDF.cgi/30003WZG.PDF?Dockey=30003WZG.PDF>.

S. Cohen & Associates. 2005. Assessment of Variations in Radiation Exposure in the United States Contract Number EP-D-05-002 Work Assignment No. 1-03. Prepared for U.S. Environmental Protection Agency Office of Radiation and Indoor Air, July 15, 2005, *available at* <https://www.nrc.gov/docs/ML1224/ML12240A227.pdf>.

United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), 2011. UNSCEAR Report of the United Scientific Committee on the Effects of Atomic Radiation 2010, Fifty-seventh session, includes Scientific Report: Summary of Low-Dose Radiation Effects on Health, 2011, 8, *available at* <https://www.unscear.org/unscear/publications/2010.html>.

United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) 2006. Sources and Effects of Ionizing Radiation: Annex E Radon, Sources to Effects. United Nations, New York, *available at* https://www.unscear.org/docs/publications/2006/UNSCEAR_2006_Annex-E-CORR.pdf.

United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) 2000. Sources and Effects of Ionizing Radiation: Volume 1: Sources, United Nations New York (2000), *available at* https://www.unscear.org/unscear/en/publications/2000_1.html.

United States Environmental Protection Agency (USEPA). 2016. A Citizen's Guide to Radon The Guide to Protecting Yourself and Your Family from Radon. EPA402/K-12/002|2016, *available at* <https://www.epa.gov/radon/citizens-guide-radon-guide-protecting-yourself-and-your-family-radon>.

United States Nuclear Regulatory Commission (USNRC) June 1989 Regulatory Guide 3.64 (Task WM 5034) Calculation Of Radon Flux Attenuation By Earthen Uranium Mill Tailings Cover, *available at* <https://www.nrc.gov/docs/ML0037/ML003739876.pdf>.

Documents Cited in Appendix 3: Radiological Risk Assessment in Support of Petition for Beneficial Use of Phosphogypsum
(Formatted as the document appears in Appendix 3)

ACAA. 2003. Fly ash facts for highway engineers. FHWA-IF-03-019. American Coal Ash Association. Aurora, CO. 81 pp, *available at* <https://www.fhwa.dot.gov/pavement/recycling/fach00.cfm>.

Caltrans. 2018. Highway design manual. California Department of Transportation, *available at* <https://dot.ca.gov/programs/design/manual-highway-design-manual-hdm>.

Casey, P.C., C.W. Alwan, C.F. Kline, G.K. Landgraf, and K.R. Linsenmayer. 2014. Impacts of using salt and salt brine for roadway deicing. Prepared for Idaho Transportation Department, Research Program, Division of Highways, Resource Center. RP 231. CTC & Associates LLC, available at <https://apps.itd.idaho.gov/apps/research/Completed/RP231.pdf>.

CEIRD. 2005. Assessing and managing the ecological impacts of paved roads. Committee on Ecological Impacts of Road Density. National Academies Press, Washington, DC. 325 pp. Permission required. Available by request from Exponent.

ECRI. 2005. Applying to EPA for approval of other uses of phosphogypsum: preparing and submitting a complete petition under 40 CFR 61.206. EC/R Incorporated. U.S. Environmental Protection Agency, Office of Radiation and Indoor Air, Radiation Protection Division, available at https://www.epa.gov/sites/production/files/2015-05/documents/wrkbk_sub-r_appl_1105.pdf.

FDEP. 2016. Biosolids use and regulations in Florida. Florida Department of Environmental Protection, Division of Water Resource Management. 39 pp.

FDOT. 2018. Manual of uniform minimum standards for design, construction and maintenance for streets and highways (commonly known as the Florida Greenbook). Florida Department of Transportation, available at <https://www.fdot.gov/roadway/floridagreenbook/fgb.shtm>.

FHWA. 2016. Coal fly ash - material description - user guidelines for waste and byproduct materials in pavement construction. <https://www.fhwa.dot.gov/publications/research/infrastructure/structures/97148/cfa51.cfm>. Accessed on October 10, 2019. Last updated on March 8, 2016. Federal Highway Administration, Office of Research, Development, and Technology, Office of Safety.

Gambogi, J. 2013. 2013 minerals yearbook: rare earths. U.S. Department of the Interior, U.S. Geological Survey, available at <https://s3-us-west-2.amazonaws.com/prd-wret/assets/palladium/production/mineral-pubs/rare-earth/myb1-2013-raree.pdf>.

Haxel, G.B., J.B. Hedrick, and G.J. Orris. 2002. Rare earth elements—critical resources for high technology. USGS Fact Sheet 087-02. U.S. Geological Survey. p. 4, available at <https://pubs.usgs.gov/fs/2002/fs087-02/>.

IAEA. 2013. Radiation protection and management of NORM residues in the phosphate industry. Safety Report Series No. 78. International Atomic Energy Agency. Vienna, Austria. p. 308, available at https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1582_web.pdf.

IDOT. 2018. Bureau of local roads and streets manual. Illinois Department of Transportation, available at <http://www.idot.illinois.gov/Assets/uploads/files/Doing-Business/Manuals-Guides-&-Handbooks/Highways/Local-Roads-and-Streets/Local%20Roads%20and%20Streets%20Manual.pdf>.

Larrañaga, M.D., R.J. Lewis, and R.A. Lewis. 2016. Hawley's condensed chemical dictionary. Sixteenth Edition Edition. John Wiley & Sons, Hoboken, NJ. Permission required. Available by request from Exponent.

Luther, S.M., M.J. Dudas, and P.M. Rutherford. 1993. Radioactivity and chemical characteristics of alberta phosphogypsum. *Water, Air, and Soil Pollution* 69:277–290. Permission required. Available by request from Exponent.

Lwin, M.M., A.W. Bruesch, and C.F. Evans. 1995. High-performance concrete for a floating bridge. pp. 155–162. In: *Fourth International Bridge Engineering Conference*. Permission required. Available by request from Exponent.

May, A., and J.W. Sweeney. 1984a. Assessment of environmental impacts associated with phosphogypsum in Florida. pp. 116–139. In: *The Chemistry and Technology of Gypsum*, ASTM STP 861. R. A. Kuntze, editor. American Society for Testing and Materials. Permission required. Available by request from Exponent.

May, A., and J.W. Sweeney. 1984b. Evaluation of radium and toxic element leaching characteristics of Florida phosphogypsum stockpiles. pp. 140–159. In: *The Chemistry and Technology of Gypsum*, ASTM STP 861. R. A. Kuntze, editor. Permission required. Available by request from Exponent.

Melton, J.S., and M.A. Kestler. 2013. Reclaimed materials and their applications in road construction: a condensed guide for road managers. AECOM and National Technology & Development Center. 60 pp, *available at* <https://www.fs.fed.us/t-d/pubs/pdfpubs/pdf12771807/pdf12771807dpi72.pdf>. Permission required. Available by request from Exponent.

Mostary, S. 2011. Trace metals leachability characterization of phosphogypsum. Masters Thesis. Engineering, University of Florida, Gainesville, FL. 141 pp, *available at* https://ufdcimages.uflib.ufl.edu/UF/E0/04/30/79/00001/mostary_s.pdf. Permission required. Available by request from Exponent.

Shacklette, H.T., and J.G. Boerngen. 1984. Element concentrations in soils and other surficial materials of the conterminous United States. U.S. Geological Survey Professional Paper 1270. U.S. Geological Survey. Washington, DC. p. 63, *available at* https://pubs.usgs.gov/pp/1270/pdf/PP1270_508.pdf.

Shahid, M., E. Ferrand, E. Schreck, and C. Dumat. 2013. Behavior and impact of zirconium in the soil-plant system: plant uptake and phytotoxicity. *Rev Environ Contam Toxicol* 221:107– 127, *available at* https://www.researchgate.net/publication/232611134_Behavior_and_Impact_of_Zirconium_in_the_Soil-Plant_System_Plant_Uptake_and_Phytotoxicity.

Smith, D.B., W.F. Cannon, L.G. Woodruff, F. Solano, J.E. Kilburn, and D.L. Fey. 2013.

Geochemical and mineralogical data for soils of the conterminous United States. Data Series. 801. U.S. Geological Survey. Reston, VA. p. 26, *available at* <https://pubs.usgs.gov/ds/801/>.

Taha, R., R.K. Seals, M.E. Tittlebaum, W. Thornsberry, and J.T. Houston. 1992. Use of byproduct phosphogypsum in road construction. *Transportation Research Record* 1345:28–35, *available at* <http://onlinepubs.trb.org/Onlinepubs/trr/1992/1345/1345-004.pdf>.

Tyler, G. 2004. Rare earth elements in soil and plant systems - a review. *Plant and Soil* 267:191–206. Permission required. Available by request from Exponent.

U.S. EPA. 1995. A guide to the biosolids risk assessments for the EPA Part 503 Rule. EPA/832B-93-005, *available at* <https://www.epa.gov/biosolids/guide-biosolids-risk-assessments-epa-part-503-rule>.

U.S. Environmental Protection Agency, Office of Wastewater Management, Washington, DC. U.S. EPA. 2014. Coal combustion residual beneficial use evaluation: fly ash concrete and FGD gypsum wallboard (final). U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response and Office of Resource Conservation and Recovery. 91 pp, *available at* <https://www.epa.gov/coalash/coal-combustion-residual-beneficial-use-evaluation-fly-ash-concrete-and-fgd-gypsum-wallboard>.

U.S. EPA. 2018. Provisional peer-reviewed toxicity values for stable (nonradioactive) soluble lanthanum (CASRN 7439-91-0). EPA/690/R-18/004. U.S. Environmental Protection Agency, National Center for Environmental Assessment, Superfund Health Risk Technical Support Center. Cincinnati, OH. 100 pp, *available at* https://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=537181.

U.S. EPA. 2019. Regional screening levels (RSLs) - user's guide. <https://www.epa.gov/risk/regional-screening-levels-rsls-users-guide>. Accessed on October 1, 2019. Last updated on May 2019.

U.S. Environmental Protection Agency. WSDOT. 1992. Use of recycled materials in highway construction. WA-RD 252.1 (Washington State Department of Transportation, Planning, Research, and Public Transportation Division. 109 pp.), *available at* <https://www.wsdot.wa.gov/research/reports/fullreports/252.1.pdf>.

Documents Cited in Appendix 4a: Response to EPA Comments on January 16, 2020 and Response to EPA Comments on the Reclaimer Scenario
(Formatted as the document appears in Appendix 4a)

Chang, Wen F., Chin, David A., and Ho, Robert, 1989. Phosphogypsum For Secondary Road Construction, University of Miami, For Florida Institute of Phosphate Research, Publication No. 01-033-077, 01-041-077 *available at* <http://fipr.state.fl.us/wp-content/uploads/2014/12/01-033-077Final.pdf>.

S. Cohen & Associates. 2005. Assessment of Variations in Radiation Exposure in the United States Contract Number EP-D-05-002 Work Assignment No. 1-03. Prepared for U.S. Environmental Protection Agency Office of Radiation and Indoor Air 1310 L Street, N.W. Washington, DC 20005 available at <https://www.nrc.gov/docs/ML1224/ML12240A227.pdf>.

NCRP Report No. 160, Ionizing Radiation Exposure of the Population of the United States, available for purchase at <https://ncrponline.org/publications/reports/ncrp-report-160-2/>.

Rockwell, Theodore, July 1956. "Reactor Shielding Manual". U.S. Atomic Energy Commission, First Edition, available at <https://www.osti.gov/biblio/4360248>.

Chang, Wen F., and Mantell, Murray I., 1990. Engineering Properties and Construction Applications of Phosphogypsum, University of Miami, Phosphate Research Institute, ISBN No. 87024-328-4. Full PDF not available online, contact FIPR for more information, <http://www.fipr.state.fl.us/publication/engineering-properties-and-construction-applications-of-phosphogypsum/>.

International Atomic Energy Agency (IAEA) 2013. *Radiation protection and management of norm residues in the phosphate*. Vienna. (Safety reports series, ISSN 1020–6450; No. 78) STI/PUB/1582 available at https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1582_web.pdf.

SENES Consultants Limited, 1997. Application for Exemption – For Use of PG in the Construction of Thornhill Road, Polk County Florida. Prepared for the Florida Institute of Phosphate Research (FIPR). Draft. Available by request from Arcadis.

Burmester, David E., 2000, *Distributions of Total Job Tenure for Men and Women in Selected Industries and Occupations in the United States, February 1996*. Risk Analysis, Vol. 20, No. 2, 2000. Available by request from Arcadis.

ICRP, Guide for the Practical Application of the ICRP Human Respiratory Tract Model, 2002 available at <https://www.icrp.org/publication.asp?id=ICRP%20Supporting%20Guidance%203>.

Allan, M; Jones-Otazo, H; Richardson, GM. (2009), Inhalation rates for risk assessments involving construction workers in Canada. Hum Ecol Risk Assess 15: 371-387, available for purchase at <https://www.tandfonline.com/doi/abs/10.1080/10807030902761445>.

Paige-Green, P., Gerber, S., "An evaluation of the use of by-product phosphogypsum as a pavement material for roads", paper presented at the South African Transport Conference — Action in Transport for the New Millennium, Pretoria, 17–20 July 2000, available at <https://pdfs.semanticscholar.org/259b/8a7ef8390619617104759e57a146c6247c23.pdf>.

Design Guide — Road Construction Based on Phosphogypsum and Fly Ash, Disposal Management System For Utilization of Industrial Phosphogypsum and Fly Ash, EU Rep. Project No.: LIFE98ENV/FIN/000566, Office for Official Publications of the European Communities, Luxembourg (2002). Not found in EU Publications: <https://op.europa.eu/en/web/general-publications/publications>. Work conducted by Fin 1998 to 2002 summarized in Polish publication *available at* <https://content.sciendo.com/view/journals/pjct/13/2/article-p18.xml>.

Akly, I.S., “Phosphogypsum test road”, By-products of Phosphate Industries (Proc. 3rd Workshop Tampa, FL, 1986), Publication 01-031-046, Florida Institute of Phosphate Research, Bartow, FL (1986) 355–370, *available at* <http://fipr.state.fl.us/wp-content/uploads/2014/12/01-031-046Final.pdf>.

Ho, R.K.H., Williams, R.W., Cogdill, L.L., Chang, W.F., “Columbia County experimental road”, Phosphogypsum (Proc. 2nd Int. Symp. Miami, FL, 1988), Publication 01-037-055, Florida Institute of Phosphate Research, Bartow, FL (1988) 397–416, *available at* <http://fipr.state.fl.us/wp-content/uploads/2014/12/01-037-055v1Final.pdf>.

Akly, I.S., “Performance of hemihydrate phosphogypsum in road construction”, paper presented at AIChE Joint Meeting, Clearwater Beach, FL, 1986, *available at* <http://fipr.state.fl.us/wp-content/uploads/2014/12/01-031-046Final.pdf>.

Ho, R.K.H., “Pavement evaluation of two gypsum stabilized country roads,” Phosphogypsum (Proc. 3rd Int. Symp. Orlando, 1990), Publication 01-060-083, Florida Institute of Phosphate Research, Bartow, FL (1990) 602–622, *available at* <http://fipr.state.fl.us/wp-content/uploads/2014/12/01-060-083v1Final.pdf>.

Metcalf, J.B., “The use of phosphogypsum in road construction”, Phosphogypsum Fact Finding Forum (Proc. Conf. Tallahassee, FL, 1995), Publication 01-132-117, Florida Institute of Phosphate Research, Bartow, FL (1995) 111–114, *available at* <http://www.fipr.state.fl.us/publication/proceedings-of-the-phosphogypsum-fact-finding-forum-december-7-1995-tallahassee-florida/>.

Chang, W.F., A Demonstration Project: Roller Compacted Concrete Utilizing Phosphogypsum, Publication 01-068-072, Florida Institute of Phosphate Research, Bartow, FL (1988) *available at* <http://fipr.state.fl.us/wp-content/uploads/2014/12/01-068-072Final.pdf>.

EPA, Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors, OSWER Directive 9200.1-120 (Feb. 6, 2014) <https://www.epa.gov/risk/oswer-directive-92001-120>.

EPA, Exposure Factors Handbook, EPA/600/R-09/052F (2011) *available at* <https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252>.

EPA, Development of Statistical Distributions or Ranges of Standard Factors Used in Exposure Assessments, PB85-242667, Aug. 1985, *available at* <https://nepis.epa.gov/Exe/ZyPDF.cgi/91007IEM.PDF?Dockey=91007IEM.PDF>.

Linn, WS; Shamoo, DA; Hackney, JD. (1992). Documentation of activity patterns in 'high-risk' groups exposed to ozone in the Los Angeles area. In RL Berglund (Ed.), Tropospheric ozone and the environment II: Effects, modeling and control (pp. 701-712). Pittsburgh, PA: Air and Waste Management Association. PDF not available. Available by request from Arcadis.

Linn, WS; Spier, CE; Hackney, JD. (1993). Activity patterns in ozone-exposed construction workers. *J Occup Med Toxicol* 2: 1-14. PDF not available. Available by request from Arcadis.

EPA, Potential Uses of Phosphogypsum And Associated Risks: Background Information Document, 402-R92-002, May 1992, *available at* <https://www.epa.gov/sites/production/files/2015-07/documents/0000055v.pdf>.

Documents Cited in Appendix 4b: Response to EPA’s Second Set of Questions
(Formatted as the document appears in Appendix 4b)

Arcadis 2019. *Radiological Risk Assessment in Support of Petition for Beneficial Use of Phosphogypsum*, Report to The Fertilizer Institute, October. Available by request from Arcadis.

EPA Land Use in the CERCLA Remedy Selection Process at (OSWER Dir. No. 9344.7-04), *available at* <https://www.epa.gov/sites/production/files/documents/landuse.pdf>.

2017 Florida Building Code - Residential, Sixth Edition, *available at* <https://codes.iccsafe.org/content/FRC2017>.

United States Environmental Protection Agency. Potential Uses of Phosphogypsum and Associated Risks – Background Information Document. Air and Radiation (ANR-459), 402-R92-002, May 1992, *available at* <https://www.epa.gov/sites/production/files/2015-07/documents/0000055v.pdf>.

ANUEAIS-8 Data Collection Handbook to Support Modeling the Impacts of Radioactive Material in Soil by C. Yu, C. Loureiro,* J.-J. Cheng, L.G. Jones, Y.Y. Wang, Y.P. Chia,* and E. Faillace, Environmental Assessment and Information Sciences Division, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439, *available at* <https://www.osti.gov/servlets/purl/10162250>.

Rogers V., Nielson K., Lehto M., Rodger H. Radon Generation and Transport Through Concrete Foundations. United States Environmental Protection Agency, Air and Energy Engineering Research Laboratory, EPA/600/SR-94/175. November 1994, *available at* <https://nepis.epa.gov>.

National Council on Radiation Protection and Measurements (NCRP). NCRP Report No. 160, Ionizing Radiation Exposure of the Population of the United States, September 2019, available for purchase at <https://ncrponline.org/publications/reports/ncrp-report-160/>.

United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) 2008. Sources and Effects of Ionizing Radiation: Annex E: Effects of Ionizing Radiation on Non-Human Biota. United Nations, New York, available at https://www.unscear.org/docs/publications/2008/UNSCEAR_2008_Annex-E.pdf.

United States Environmental Protection Agency. A Citizen's Guide to Radon. EPA402/K-12/002|2016, available at <https://www.epa.gov/radon/citizens-guide-radon-guide-protecting-yourself-and-your-family-radon>.

Documents Cited in Appendix 6: Policy Navigation Group, Economic Analysis of Phosphogypsum Reuse, December 2019 (Prepared for TFI)
(Formatted as the document appears in Appendix 6)

Altun, I.A., and Y. Sert. "Utilization of Weathered Phosphogypsum as a Set Retarder in Portland Cement." *Cement and Concrete Research* 34 (2004): 677-80. Available by request from Policy Navigation Group.

BCI Engineers & Scientists, Inc. "Phosphogypsum Stack Closure: Evaluation of Phosphogypsum as an Alternate Final Cover." Bartow, Florida: Florida Institute of Phosphate Research, May 2002, available at <http://fipr.state.fl.us/wp-content/uploads/2014/11/03-125-195Final.pdf>.

City of Moorpark. "Construction Demolition Conversion Table," n.d., available at <https://moorparkca.gov/DocumentCenter/View/943/CD-Conversion-Table?bidld=>.

European Phosphate Fertilizer Alliance. "Data and Statistics: Phosphoric Acid." Bruxelles. Accessed April 17, 2019, available at <http://aeep.eu/data-and-statistics/phosphoric-acid/>.

Florida Department of Environmental Protection. "Florida Gypsumstacks, Phosphogypsum Stack System Layer," 2019, available at http://myflorida-floridadisaster.opendata.arcgis.com/datasets/6277c3b1eeae4a818f8683fc29e6b35b_0.

Jasinski, Stephen M. "Phosphate Rock." 2015 Minerals Yearbook. U.S. Department of the Interior, November 2016, available at <https://s3-us-west-2.amazonaws.com/prd-wret/assets/palladium/production/mineral-pubs/phosphate-rock/myb1-2015-phosp.pdf>.

Layr, Kathrin, and Philipp Hartlieb. "Market Analysis for Urban Mining of Phosphogypsum." *BHM Berg- Und Hüttenmannsche Monatshefte* 164, no. 6 (April 2019): 245-49, available at <https://link.springer.com/article/10.1007/s00501-019-0855-8?shared-article-renderer>.

Rashad, Alaa M. "Phosphogypsum as a Construction Material." *Journal of Cleaner Production* 166 (2017): 732-43. Available by request from Policy Navigation Group.

Sahu, S. K., P. Y. Ajmal, R. C. Bhangare, M. Tiwari, and G. G. Pandit. "Natural Radioactivity Assessment of a Phosphate Fertilizer Plant Area." *Journal of Radiation Research and Applied Sciences* 7, no. 1 (January 1, 2014): 123-28, available at <https://www.tandfonline.com/doi/full/10.1016/j.jrras.2014.01.001>.

Shen, Yan, Jueshi Qian, Junqing Chai, and Yunyan Fan. "Calcium Sulphoaluminate Cements Made with Phosphogypsum: Production Issues and Material Properties." *Cement and Concrete Composites* 48 (2014): 67-74. Available by request from Policy Navigation Group.

Singh, Manjit. "Treating Waste Phosphogypsum for Cement and Plaster Manufacture." *Cement and Concrete Research* 32 (2002): 1033-38. Available by request from Policy Navigation Group.

University of Miami. "Phosphogypsum for Secondary Road Construction." Bartow, Florida: Florida Institute of Phosphate Research, 1989, available at <http://fipr.state.fl.us/wp-content/uploads/2014/12/01-033-077Final.pdf>.

U.S. Department of Labor, Bureau of Labor Statistics. "CPI Inflation Calculator," 2019, available at https://www.bls.gov/data/inflation_calculator.htm.

U.S. Environmental Protection Agency. "National Emission Standards for Hazardous Air Pollutants; National Emissions Standards for Radon Emissions from Phosphogypsum Stacks; 40 CFR Part 61." *Federal Register* 57, no. 107 (n.d.): 23305-20, available at <https://www.govinfo.gov/app/details/FR-1992-06-03>.

---. "Potential Uses of Phosphogypsum and Associated Risks: Background Information Document for 40 CFR 61, Subpart R, National Emission Standards for Radon Emissions from Phosphogypsum Stacks," May 1992, available at <https://www.epa.gov/sites/production/files/2015-07/documents/0000055v.pdf>.

U.S. EPA, Region 4, Superfund Division. "Engineering Evaluation/Cost Analysis: Closure of the East Gypsum Stack and North Ponds, Mississippi Phosphates Corporation Site, Pascagoula, Jackson County, Mississippi." Atlanta, December 2017. <https://semspub.epa.gov/work/04/11095514.pdf>.