Gavin Power, LLC

Addendum to 2020 Annual Groundwater Monitoring and Corrective Action Reports

Gavin Residual Waste Landfill and Fly Ash Reservoir

Gavin Plant
Cheshire, Ohio

7 December 2021

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Addendum to 2020 Annual Groundwater Monitoring and Corrective Action Reports

Gavin Residual Waste Landfill and Fly Ash Reservoir

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Acronyms and Abbreviations

amsl	above mean sea level
ASD	Alternate Source Demonstration
BAC	Bottom Ash Complex
BAP	Bottom Ash Pond
CCR	Coal combustion residuals
CCR Rule	Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments
CCR Unit	Bottom Ash Pond CCR Surface Impoundment
CFR	Code of Federal Regulations
ERM	ERM Consulting & Engineering, Inc.
FAR	Fly Ash Reservoir
Gavin	Gavin Power, LLC
OEPA	Ohio Environmental Protection Agency
ORSANCO	Ohio River Valley Water Sanitation Commission
Plant	General James M. Gavin Power Plant
RWL	Residual Waste Landfill
SSI	Statistically Significant Increase
USGS	United States Geological Survey

EXECUTIVE SUMMARY

On behalf of Gavin Power, LLC (Gavin), ERM Consulting and Engineering, Inc. (ERM) has prepared this *Addendum to the 2020 Annual Groundwater Monitoring and Corrective Action Reports (Addendum)* for the Residual Waste Landfill (RWL) and Fly Ash Reservoir (FAR) at the General James M. Gavin Power Plant (Plant) located in Cheshire, Ohio. The RWL and FAR are coal combustion residual (CCR) management units at the Plant that are subject to regulation under Title 40, Code of Federal Regulations, Part 257, Subpart D (40 CFR § 257.50 *et seq.*), also known as the CCR Rule. In 2021, a combined monitoring well network was certified for the RWL and FAR, as documented in the *Updated Groundwater Monitoring System Evaluation and Certification—40 CFR 257.91* (ERM 2021a). Previously, Gavin maintained and monitored two separate (though adjacent) groundwater monitoring networks for the RWL and FAR. Following the combination and certification of the two networks into a single combined monitoring well network, Gavin commissioned ERM to evaluate the data from the combined network to verify the conclusions contained in the 2020 Annual Groundwater Monitoring and Corrective Action Reports for the RWL and FAR, which were prepared and posted consistent with the requirements of 40 CFR § 257.90(e). Specifically, this Addendum evaluates the 2020 groundwater monitoring results from the combined monitoring well network to determine whether they confirm the CCR Rule compliance findings contained in the 2020 annual reports.

The groundwater monitoring programs for the RWL and FAR began calendar year 2020 in "detection monitoring" status as defined by 40 CFR § 257.94. Groundwater monitoring in 2020 consisted of two semiannual monitoring events completed in March and September 2020, which included groundwater level measurements and groundwater sampling. Groundwater level measurements were used to construct updated groundwater potentiometric surface maps for each of the geologic units monitored. Groundwater samples were collected for laboratory analysis of CCR Rule Appendix III constituents and the results were compared to previously calculated upgradient well prediction limits to identify statistically significant increases (SSIs) for downgradient wells.

Only one SSI for an Appendix III constituent was identified at each CCR unit during 2020 based on sampling of the separate groundwater monitoring networks: an SSI for pH at FAR monitoring well 2016-07 in the first half of 2020, and an SSI for total dissolved solids (TDS) at RWL monitoring well 2016-20 in the second half of 2020. Gavin successfully prepared alternate source demonstrations (ASDs) for these two SSIs, allowing both CCR units to remain in detection monitoring in 2021.

In preparing this Addendum, ERM, on behalf of Gavin, evaluated the 2020 data from the combined groundwater monitoring network (as certified in August 2021) to determine whether reliance on the combined network in 2020 would have changed any of the CCR compliance determinations contained in the 2020 Annual Reports for the RWL and FAR. Only one SSI was identified when evaluating the data collected in 2020 from the combined monitoring network: boron at monitoring well 2018-01 in March 2020. Although technically not applicable to 2020 (because the combined network was not certified until August 2021), ERM nevertheless prepared an ASD for the boron SSI (as presented in Section 4 of this Addendum) to determine whether that finding would have changed the monitoring status of either CCR unit. The ASD presented in Section 4 identifies regional brine as the source of boron and identifies the use of cement-bentonite grout for well installation as the catalyst for the localized mobilization of previously adsorbed boron. Thus, even if the combined monitoring well network had been in effect in 2020, the RWL and FAR would have remained in detection monitoring at the conclusion of 2020. Accordingly, no remedial actions would have been required in 2020, regardless of whether the separate or combined monitoring well networks had been used.

INTRODUCTION

The General James M. Gavin Plant (Plant) is located in southeast Ohio along the western bank of the Ohio River (Figure 1-1) near Cheshire, Ohio. The Plant consists of three regulated coal combustion residual (CCR) management units that are subject to regulation under Title 40, Code of Federal Regulations, Part 257, Subpart D (40 CFR 257.50 *et seq.*), also known as the CCR Rule: the Residual Waste Landfill (RWL), the Fly Ash Reservoir (FAR), and the Bottom Ash Pond (BAP). A combined groundwater monitoring system was certified in August 2021 to monitor for potential releases from the RWL and FAR. Previously, Gavin maintained and monitored two separate (though adjacent) groundwater monitoring networks for the RWL and FAR, but certified the combined monitoring network on August 31, 2021 (*Updated Groundwater Monitoring System Evaluation and Certification—40 CFR 257.91* (ERM 2021a)). The BAP has a separate monitoring system (ERM 2021b) and is not addressed in this report.

ERM Consulting & Engineering, Inc. (ERM) has prepared this Addendum to the 2020 Annual Groundwater Monitoring and Corrective Action Report on behalf of Gavin Power, LLC (Gavin) to evaluate the data collected in 2020 from the wells included in the current combined groundwater monitoring network to determine whether reliance on that combined network in 2020 (as opposed to the separate networks in place at the time) would have changed any of the CCR Rule compliance findings and conclusions contained in the 2020 annual reports for the RWL and FAR.

In accordance with the CCR Rule, Gavin has been implementing the groundwater monitoring requirements of 40 CFR § 257.90 et seq. for its RWL and FAR CCR units at the Plant. Gavin calculated background levels and conducted statistical analyses for Appendix III constituents in accordance with 40 CFR § 257.93(h). Currently, Gavin is performing detection monitoring at the RWL and FAR in accordance with 40 CFR § 257.94.

REGULATORY STATUS

2.1 Description of the CCR Units

The RWL is located about 1.25 miles northwest of the Plant (Figure 2-1) and is permitted by the Ohio Environmental Protection Agency to accept and dispose of CCR material as a Class 3 Landfill. Approximately 98 percent of this material is Flue Gas Desulfurization byproduct (consisting of scrubber cake, fly ash, and lime) and the remaining 2 percent is other approved materials (bottom ash, lime ball mill rejects, coal pulverizer rejects, and BAP sediments).

The FAR is approximately 300 acres in size and is located about 2.5 miles northwest of the Plant (Figure 2-1). From the mid-1970s until January 1995, fly ash was sluiced to the FAR and the settled CCR materials were retained behind the Stingy Run Fly Ash Dam that formed the FAR. The facility was closed in place, and the closure was completed in 2021.

Expansion of the RWL was proposed in the *Final Permit-to-Install Application – Expansion of the Gavin Plant Residual Waste Landfill (PTI)* submitted in 2012 (Geosyntec 2012). Expansion of the RWL has been ongoing as the capacity needs have arisen, and the limit of waste has extended northward. As a result of this expansion and the placement of CCR in formerly undisturbed areas, Gavin has had to abandon a limited number of groundwater monitoring wells within the larger footprint.

2.2 Description of Monitoring System

The RWL and FAR had previously been monitored using separate groundwater monitoring networks as described in the documents: *Groundwater Monitoring Network Evaluation—Residual Waste Landfill* (Geosyntec 2016a) and the *Groundwater Monitoring Network Evaluation—Fly Ash Reservoir* (Geosyntec 2016b). Annual Groundwater Monitoring and Corrective Action Reports for 2020 under these separate monitoring systems were prepared for the FAR (ERM 2021c) and RWL (ERM 2021d) and were posted to the Plant operating record on 31 January 2021. As a result of the ongoing expansion of the RWL, several monitoring wells along the northern and western RWL boundaries were removed and a portion of the RWL was expanded over the FAR. To account for these changes and ensure an adequate groundwater monitoring system for both units, a combined network for the two CCR units was identified and certified in August 2021.

The combined network currently contains 24 upgradient and 15 downgradient monitoring wells. The upgradient wells are placed to accurately represent the quality of background groundwater that has not been affected by potential leakage from the RWL and FAR units, while the downgradient wells are positioned at the downgradient boundary of waste to detect potential release of CCR constituents from the CCR units into groundwater in the uppermost aquifer.

2020 STATUS OF MONITORING PROGRAM

3.1 2020 Sampling Summary

Groundwater samples were collected in 2020 as part of the detection monitoring program under 40 CFR § 257.94 and analyzed for the constituents listed in Appendix III to 40 CFR Part 257, Subpart D. Samples were collected in 2020 based on the existing separate 2016 RWL and FAR monitoring networks; therefore, some wells that were added to the combined monitoring program in 2021 were not sampled in 2020. Table 3-1 lists all of the wells in the combined network, the dates of sampling, or "NS" for wells that were not sampled in spring or fall of 2020.

Consistent with the CCR Rule and the Gavin Statistical Analysis Plan (ERM 2017), a prediction limit approach was used to identify potential impacts to groundwater. Upper prediction limits were developed for the Appendix III parameters; in the case of pH, a lower prediction limit was also developed. The 2018 Alternate Source Demonstration for the RWL (ERM 2018) provides documentation of the most recent revisions of the upper and lower prediction limits.

Table 3-1. 2020 Sampling Dates for RWL-FAR Combined Network

Monitoring Well	Geologic Unit	Location	Sampling Dates	
			Spring	Fall
2000	Morgantown	Downgradient	24 March 2020	22 September 2020
2003	Morgantown	Upgradient	24 March 2020	21 September 2020
9396	Cow Run	Upgradient	NS	NS
9631	Cow Run	Downgradient	NS	NS
9801	Cow Run	Upgradient	24 March 2020	NS
9802	Alluvium	Downgradient	24 March 2020	22 September 2020
9806	Morgantown	Downgradient	25 March 2020	17 September 2020
9910	Morgantown	Upgradient	15 March 2020	17 September 2020
93100	Cow Run	Upgradient	19 March 2020	22 September 2020
93108	Morgantown	Downgradient	NS	NS
94136	Cow Run	Downgradient	25 March 2020	25 September 2020
94137	Alluvium	Downgradient	25 March 2020	25 September 2020
94139	Morgantown	Upgradient	19 March 2020	22 September 2020
96152	Morgantown	Upgradient	26 March 2020	17 September 2020
96153R*	Morgantown	Upgradient	15 March 2020 24 March 2020	15 September 2020
96154R	Morgantown	Upgradient	12 March 2020	14 September 2020
96156	Morgantown	Upgradient	NS	NS
96157	Alluvium	Downgradient	NS	NS
96158	Cow Run	Downgradient	NS	NS
2016-03	Morgantown	Upgradient	25 March 2020	21 September 2020
2016-04	Cow Run	Upgradient	25 March 2020	21 September 2020
2016-05	Morgantown	Downgradient	NS	NS

Monitoring Well	Geologic Unit	Location	Sampling Dates	
			Spring	Fall
2016-06	Cow Run	Downgradient	15 March 2020	17 September 2020
2016-07*	Morgantown	Upgradient	15 March 2020 24 March 2020	17 September 2020
2016-08*	Cow Run	Upgradient	15 March 2020 24 March 2020	17 September 2020
2016-09	Cow Run	Upgradient	12 March 2020	14 September 2020
2016-10	Cow Run	Upgradient	30 March 2020	14 September 2020
2016-11	Morgantown	Upgradient	NS	NS
2018-01	Cow Run	Downgradient	24 March 2020	22 September 2020
2018-02	Morgantown	Downgradient	8 April 2020	16 November 2020
2018-03	Cow Run	Downgradient	8 April 2020	16 November 2020
2018-04	Morgantown	Downgradient	8 April 2020	16 November 2020
2019-02	Morgantown	Upgradient	NS	15 September 2020
2019-06	Morgantown	Upgradient	NS	15 September 2020
2019-07	Cow Run	Upgradient	NS	NS
2019-09	Cow Run	Upgradient	NS	NS
MW-16	Morgantown	Upgradient	NS	NS
MW-17	Cow Run	Upgradient	NS	NS
MW-20*	Cow Run	Upgradient	15 March 2020 24 March 2020	15 September 2020

Notes:
NS = Not Sampled
** Samples collected 15 March 2020 were misplaced for monitoring wells 96153R, 2016-07, 2016-08, and MW-20. The wells were re-sampled on 24 March 2020. The first samples were located and both sets of samples were analyzed. Both sets of data were found to be valid and appropriate for decision making purposes.*

3.2 2020 Sampling Event Results

Results from the 2020 sampling from the wells included in the current combined groundwater monitoring network (as listed in Table 3-1 above) are summarized in Table 3-2 for the Morgantown/Alluvium downgradient wells and Table 3-3 for the Cow Run downgradient wells.

Table 3-2: SSIs from 2020 Sampling Events—Morgantown/Alluvium

	Monitoring Well																	
	2000		93108[1]		94137		96157[2]		9802		9806		2016-05[1]		2018-02		2018-04	
Analyte/Event	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
Boron	ϕ	ϕ	NS	NS	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ
Calcium	ϕ	ϕ	NS	NS	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ
Chloride	ϕ	ϕ	NS	NS	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ
Fluoride	ϕ	ϕ	NS	NS	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ
pH	ϕ	ϕ	NS	NS	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ
Sulfate	ϕ	ϕ	NS	NS	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ
Total Dissolved Solids	ϕ	ϕ	NS	NS	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ	NS	NS	ϕ	ϕ	ϕ	ϕ

Notes: H1 = spring; H2 = fall; NS = Not Sampled; ϕ = No SSI; X = SSI; SSI = statistically significant increase
1. Wells 93108 and 2016-05 were not sampled in 2020 because they had an insufficient volume of water to allow collection of samples.
2. Well 96157 was not sampled in 2020 because it was not part of the federal monitoring network at the time of sampling.

Table 3-3: SSIs from 2020 Sampling Events—Cow Run

	Monitoring Well											
	94136		96158[1]		9631[1]		2016-06		2018-01		2018-03	
Analyte/Event	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
Boron	ϕ	ϕ	NS	NS	NS	NS	ϕ	ϕ	X	ϕ	ϕ	ϕ
Calcium	ϕ	ϕ	NS	NS	NS	NS	ϕ	ϕ	ϕ	ϕ	ϕ	ϕ
Chloride	ϕ	ϕ	NS	NS	NS	NS	ϕ	ϕ	ϕ	ϕ	ϕ	ϕ
Fluoride	ϕ	ϕ	NS	NS	NS	NS	ϕ	ϕ	ϕ	ϕ	ϕ	ϕ
pH	ϕ	ϕ	NS	NS	NS	NS	ϕ	ϕ	ϕ	ϕ	ϕ	ϕ
Sulfate	ϕ	ϕ	NS	NS	NS	NS	ϕ	ϕ	ϕ	ϕ	ϕ	ϕ
Total Dissolved Solids	ϕ	ϕ	NS	NS	NS	NS	ϕ	ϕ	ϕ	ϕ	ϕ	ϕ

Notes: H1 = spring; H2 = fall; NS = not sampled; ϕ = No SSI; X = SSI; SSI = statistically significant increase
1. Wells 96158 and 9631 were not sampled as part of the federal sampling event in spring 2020 because they were not part of the federal monitoring network at the time of sampling.

Comparing the results of samples taken from the wells in the combined groundwater monitoring network during 2020 to the previously determined prediction limits revealed only one SSI – boron at 2018-01 in spring 2020. Although not technically required, because the combined network was only certified in August 2021, ERM, on behalf of Gavin, nevertheless prepared an ASD to determine whether that SSI could have indicated a release from one of the CCR units. Based on that ASD, an alternate source for the boron SSI at 2018-01 was identified, as discussed in Section 4 of this Addendum. A record of all historical

analytical results obtained from wells in the RWL/FAR groundwater monitoring program is included in Appendix A.

ALTERNATE SOURCE DEMONSTRATION

4.1 Regulatory and Legal Framework

In accordance with 40 CFR § 257.93(h), Gavin compared spring and fall 2020 sampling results to calculated background levels for Appendix III constituents. A statistically significant increase over the background concentration was detected in downgradient monitoring well 2018-01 for an Appendix III constituent for the spring 2020 semiannual groundwater sampling event.

An SSI for one or more Appendix III constituents is considered under the CCR Rule as a potential indication of a release from the CCR unit to groundwater. In the event of an SSI, the CCR Rule provides that "the owner or operator may demonstrate that a source other than the CCR unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality" (40 CFR § 257.94(e)(2)). If it can be demonstrated that the SSI is due to a source other than the CCR unit, then the CCR unit may remain in the Detection Monitoring Program instead of transitioning to an Assessment Monitoring Program. An Alternate Source Demonstration (ASD) must be made in writing and the accuracy of the information must be verified through certification by a qualified Professional Engineer (40 CF § 257.94(e)(2)).

The United States Environmental Protection Agency (USEPA) guidance document, "Solid Waste Disposal Facility Criteria Technical Manual, USEPA 530-R-93-017, Subpart E" (USEPA 1993), specifies six lines of evidence (listed below) that must be addressed to determine whether an SSI resulted from a source other than the regulated disposal unit.

1. An alternative source exists.
2. A hydraulic connection exists between the alternative source and the well with the significant increase.
3. Constituent(s) (or precursor constituents) are present at the alternative source or along the flow path from the alternative source prior to possible release from the unit.
4. The relative concentration and distribution of constituents in the zone of contamination are more strongly linked to the alternative source than to the unit when the fate and transport characteristics of the constituents are considered.
5. The concentration observed in groundwater could not have resulted from the unit given the waste constituents and concentrations in the unit leachate and wastes and the site hydrogeologic conditions.
6. The data supporting conclusions regarding the alternative source are historically consistent with the hydrogeologic conditions and findings of the monitoring program.

This ASD addresses each of these lines of evidence for the SSI detected in the groundwater beneath the RWL/FAR in spring 2020—boron at monitoring well 2018-01.

4.2 Description of Alternate Source

The alternate source identified for boron at monitoring well 2018-01 is naturally occurring regional brine within the Cow Run Sandstone (Figure 4-1). The Cow Run is the shallowest sedimentary member that carries naturally occurring brine in the region of the Plant (Phalen 1919, Stout et. al. 1932). Under neutral pH conditions boron in brine-impacted groundwater would partition from groundwater to aquifer solids through adsorption processes; this process results in the accumulation of boron on aquifer solids and limits the concentration of boron in groundwater. Boron adsorption to aquifer solids increases with

increasing pH, reaching a maximum around pH 9.0, while further increases in pH result in desorption and greater mobility of boron in groundwater (Goldberg 1997, ATSDR 2010, Steiner and do Carma Lana 2013).

The sandstone, shale, limestone, coal, and other sedimentary rocks of the Conemaugh Group in southeast Ohio do not contain caustic minerals or rocks, and Cow Run groundwater upgradient of the Plant has a near-neutral pH. The use of cement-bentonite grout for well construction has a potential to impact groundwater pH if the cement does not cure quickly; when these impacts are observed, they are typically associated with groundwater pH values above 10 (Pohlmann and Alduino 1992). In low-permeability formations like the Cow Run, the impacts of grout materials may persist for months to years due to the slower rate of groundwater migration through the screened interval of the monitoring well (Pohlmann and Alduino 1992, Barcelona and Helfrich. 1986). The introduction of strongly alkaline material such as cement into the Cow Run Sandstone therefore has the potential to cause desorption of boron from the aquifer solids, and thereby increase the concentration of boron in groundwater.

Groundwater from monitoring well 2018-01 had a pH of 12.1 during the first sampling event in November 2019; pH values this high are not observed at other nearby Cow Run wells, and is strongly indicative of impacts from uncured cement. The pH declined in each successive sampling event, which is consistent with curing of the cement and flushing of the well screen interval. During the time period from November 2019 to September 2021, the concentration of boron in groundwater declined from 0.9 milligrams per liter to 0.45 milligrams per liter (Figure 4-2). Results from samples collected after spring 2020 show boron results below the upper prediction limit.

These lines of evidence demonstrate the alternate source identified for boron at monitoring well 2018-01 is boron adsorbed to aquifer solids within the Cow Run Sandstone. Naturally occurring regional brine mixed with groundwater is a regional source of boron, and under neutral pH conditions, boron is expected to adsorb (i.e., accumulate) on aquifer solids.

4.3 Hydraulic Connections to the Alternate Source

Regional groundwater flow near and surrounding the RWL occurs primarily within fractured sedimentary rocks of the Conemaugh Group, which contain the Morgantown and the Cow Run Sandstones (Wyrick and Borchers 1981, USGS 2016). These sedimentary rock groups extend west of the RWL where naturally occurring brine is known to influence groundwater quality. Figure 4-1 illustrates the pathway for regional groundwater flow through the fractured bedrock from the northern and western regions under the RWL, to the southern and eastern regions toward the Ohio River. While migrating through the fractured bedrock, upgradient groundwater can mix with naturally occurring brine containing boron as it then flows beneath the RWL. Over time, low levels of boron contained within the groundwater have interacted with bedrock and underwent adsorption to aquifer solids. Based on these considerations, the fractured rock of the Conemaugh Group, which includes the Cow Run Sandstone, is hydraulically connected to the potential alternate source of boron.

In addition, cement injected in the borehole during construction of monitoring well 2018-01 could have penetrated the fractured bedrock aquifer immediately surrounding the well screen. Groundwater migrating through the aquifer near the well screen likely was exposed to the uncured cement, exposing the aquifer solids to elevated pH conditions in the immediate vicinity of the well screen. Thus, the alternate source (boron adsorbed to aquifer solids) and the release mechanism (elevated pH from cement) are in hydraulic connection with groundwater entering monitoring well 2018-01.

4.4 Presence of Constituents from the Alternate Source

Cement mixtures are strongly basic and can have a pH between 12 and 13 (Portland Cement Association 2018). Groundwater surrounding the well screen of well 2018-01 likely contacted uncured cement. The

elevated pH persists after well installation and multiple sampling events due the naturally low groundwater velocity of the Cow Run formation, and the limited flushing of the well screen interval.

Boron has been reported to be present in brine (Fan et al. 2018, White et al. 1963, EPRI 2017). Over long periods of time, boron flowing through the region could be adsorbed to aquifer solids by exchange with surface hydroxyl groups (Goldberg and Su 2006). This adsorbed boron would be released by the high pH water resulting from groundwater contacting uncured cement.

As discussed in Section 4.3, brine is commonly found at relatively shallow depths or at the land surface in the Ohio River Valley. The fractured bedrock aquifers of the Monongahela and Conemaugh Group act as the flow pathways where brine can mix with groundwater (Figure 4-1). The Cow Run is the shallowest sedimentary member that carries naturally occurring brine in the region of the Plant (Stout et. al. 1932).

These combined lines of evidence demonstrate that the alternative source is boron present in regional brine and along the flow paths underneath the RWL, and the release mechanism (desorption from aquifer solids due to elevated pH) is present in the vicinity of monitoring well 2018-01.

4.5 Relationship of the Alternate Source to Downgradient Wells

The geochemical fingerprints of landfill leachate and monitoring wells screened in the Cow Run Sandstone were determined using a Piper diagram. The Piper diagram is a graphical procedure commonly used to interpret sources of dissolved constituents in water and evaluate the potential for mixing of waters from different sources (Piper 1944). The samples presented on the diagram were collected from 2010 through 2021. The primary observations and conclusions based on the 2018-01 Piper Diagram (Figure 4-3) are the following:

- Multiple datasets collected from a single location (e.g., monitoring well 94136 or Pond 1 Leachate) tended to be tightly clustered, indicating that the chemical signatures of individual locations were consistent over time.
- Regional brine is characterized by elevated sodium/potassium and chloride, and plots on the right side of the upper diamond. The anion signature is dominated by chloride and regional brine consistently plots in the bottom-right corner of the lower-right triangle.
- Groundwater from the upgradient Cow Run wells 2019-07, 93100, and 9801 (shown in blue on Figure 4-3) has a geochemical signature dominated by chloride and sodium, with very low sulfate and magnesium.
- Landfill leachate plots in the upper portion of the upper diamond of the piper diagram and is characterized by elevated concentrations of calcium and sulfate or chloride.
- Groundwater from the downgradient Cow Run wells 2018-03, 94136, and 9631 has a geochemical signature similar to upgradient groundwater, dominated by chloride and sodium. When compared to landfill leachate, downgradient groundwater has lower calcium and sulfate.
- Groundwater at monitoring well 2018-01 has a geochemical signature similar to upgradient and downgradient Cow Run groundwater and is distinct from leachate.

Thus, the chemical characteristics of groundwater from monitoring well 2018-01 are more strongly linked to the alternative source (brine impacted groundwater in the Cow Run) than to the RWL, whose leachate has a distinct geochemical signature that is higher in calcium and sulfate.

4.6 RWL Release Potential

The RWL was constructed with a leachate collection system, and leachate is collected and treated in several ponds located around the landfill. Analytical results are available for samples collected from the

leachate ponds, and represent the geochemical fingerprint of water in direct contact with CCR leachate from the RWL. As described in Section 4.5, and displayed on Figure 4-3, the signature of groundwater at monitoring well 2018-01 is similar to other Cow Run wells and is distinct from the signature of leachate.

Additionally, the RWL is located above the Morgantown Sandstone, and a release would impact groundwater at Morgantown monitoring wells. However, elevated boron concentrations were not observed at any downgradient Morgantown wells. These lines of evidence combine to demonstrate that RWL leachate is not the source of the boron observed at well 2018-01.

4.7 Alternate Source Consistency with Hydrogeologic Conditions

This ASD provides background groundwater quality for the fractured sedimentary bedrock aquifers found within and beyond the boundary of the RWL. The patterns of regional groundwater flow through fractured rock near the RWL were established after the last deglaciation, which occurred approximately 14,000 years ago (Hansen 2017). A conservatively high effective porosity of 1 percent results in an estimated groundwater velocity for the Morgantown Sandstone and Cow Run Sandstone of 75 feet per year and 32 feet per year based on groundwater gauging in the fall of 2020, respectively, which would allow ample time for groundwater to migrate from upgradient regional sources onto Plant property since the end of the last glaciation. The data supporting these conclusions are historically consistent with hydrogeologic conditions and findings of the monitoring program.

4.8 Conclusions

The boron concentration associated with the sample collected from monitoring well 2018-01 in March 2020 was an SSI over the background concentration as determined retroactively after the well was added to the combined groundwater monitoring network for the RWL and FAR. The SSI was determined to be from an alternate source: boron in naturally occurring brine had mixed with groundwater in the Cow Run Sandstone and also adsorbed to aquifer solids. The mechanism of release was the use of cement for installation of monitoring well 2018 01, which resulted in a temporary and localized increase in pH that facilitated desorption of boron from aquifer solids to groundwater. Table 9-1 summarizes the six lines of evidence of this ASD for this SSI.

Table 4-1: 2018-01 ASD Summary

Line of Evidence	TDS
Alternate source	Naturally occurring boron from regional brine was mobilized by high pH groundwater resulting from cement-grout intrusion.
Hydraulic connection	Cement from well construction is in contact with groundwater; regional groundwater flows under the RWL.
Constituent present at source or along flow path	Boron is present in regional brine within the Cow Run Sandstone and cement is located near the well screen.
Constituent distribution more strongly linked to alternate source	The geochemical signature of 2018-01 groundwater is consistent with upgradient Cow Run wells, and not consistent with the signature of RWL leachate.
Constituent could not have resulted from the RWL	Piper diagrams depict different chemical fingerprints between RWL leachate and groundwater, and a release would have impacted shallower aquifers before impacting the Cow Run, yet no SSIs were identified for the Morgantown Sandstone in the spring of 2020.

Line of Evidence	TDS
Data are historically consistent with hydrogeologic conditions	Sufficient time has passed since the last ice age for brine-impacted groundwater to migrate through the Cow Run Sandstone under the RWL, which is historically consistent with the hydrogeologic conditions and findings of the monitoring program.

In conclusion, the RWL was not the source of the potential boron SSI identified in the retroactive evaluation of data from the first semiannual groundwater sampling event of 2020, based on the current combined groundwater monitoring network. Thus, consistent with the conclusions contained in the 2020 Annual Groundwater Monitoring and Corrective Action Reports for the RWL and FAR, the Plant will continue detection monitoring at the RWL in accordance with 40 CFR § 257.94(e)(2). Moreover, results from semiannual sampling events in fall 2020 and spring 2021 indicate boron concentrations have decreased below the upper prediction limit and there have been no further SSIs.

4.9 Key Future Activities

As demonstrated herein, a release from the RWL/FAR is not responsible for the SSI identified through the retroactive evaluation of 2020 data from the now-combined groundwater monitoring network. Based on the previous findings presented in the 2020 annual reports for the RWL and FAR, and consistent with the additional evaluation of data from the current combined network presented in this Addendum, the RWL and FAR remain in detection monitoring in 2021. The 2021 annual report will include all wells sampled as part of the revised RWL/FAR well network and results will be compared to the prediction limits.

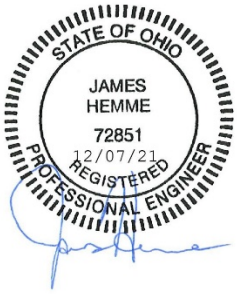
PROFESSIONAL ENGINEER CERTIFICATION

I hereby certify that I, or an agent under my review, have prepared this Alternate Source Demonstration Report for the Residual Waste Landfill and Fly Ash Reservoir and it meets the requirements of 40 CFR § 257.94(e)(2). To the best of my knowledge, the information contained in this report is true, complete, and accurate.

_____

James A. Hemme, P.E.
State of Ohio License No.: 72851

Date: ___12/7/2021_____



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FIGURES

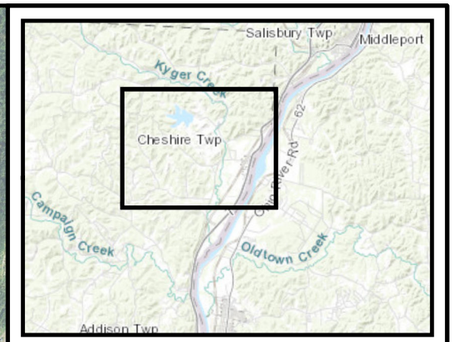
Figure 1-1: Gavin Plant Location
Gavin Generating Station
Cheshire, Ohio

Fly Ash Reservoir

Residual Waste Landfill

Bottom Ash Pond

Ohio River



Legend

- Fly Ash Reservoir
- Permitted Limit of Waste
- Previous Limit of Waste
- Gavin Property Boundary

NOTE:

1. Limits of Waste from Revised Gavin RWL Permit-To-Install Application Drawing No. 12-30429-B (Geosyntec 2014)

N

0 500 1,000 2,000 3,000 4,000

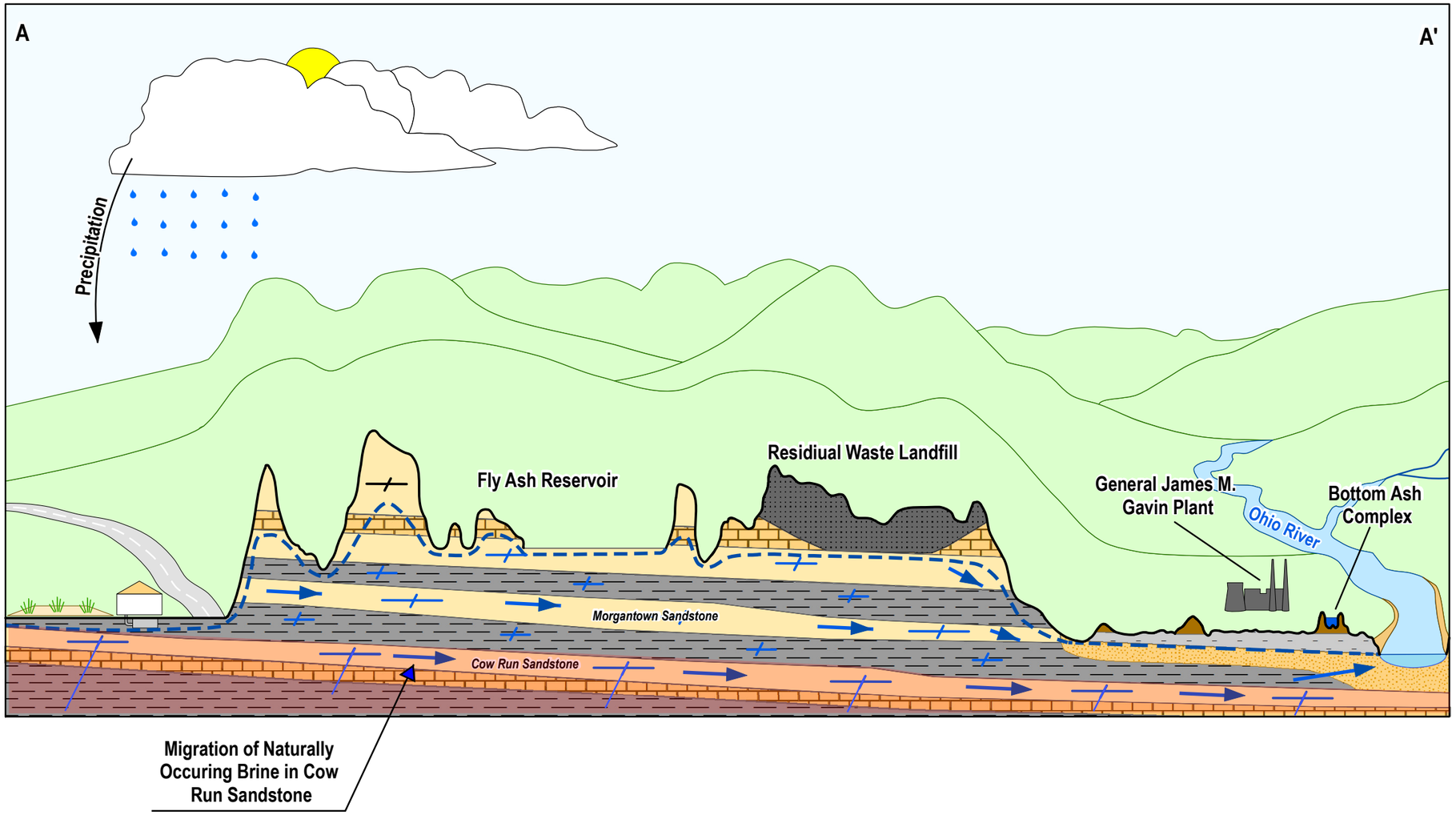
Feet

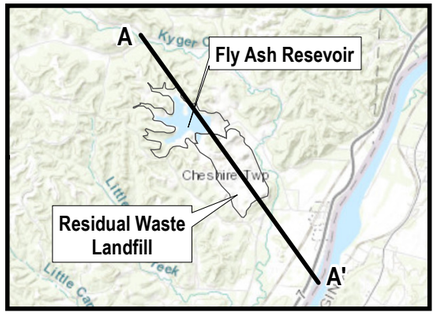
Figure 2-1: Residual Waste Landfill and Fly Ash Reservoir Location

Gavin Power, LLC

Cheshire, Ohio

ERM





Legend

- Groundwater Flow Direction
- Water Table
- Saturated Fractures
- Unsaturated Fractures
- Naturally Occuring Brine
- FGD Material
- Fill
- Interbedded Silt/Clay
- Sand
- Sandstone
- Fractured Limestone
- Fractured Shale

NOTES:

1. Sandstone bedrock units represent the Conemaugh Group and Monongahela Group Sedimentary Aquifers

0 500 1,000 2,000 3,000 4,000 5,000
Feet

Figure 4-1: Regional Groundwater Flow Patterns

Gavin Power, LLC
Cheshire, Ohio

ERM

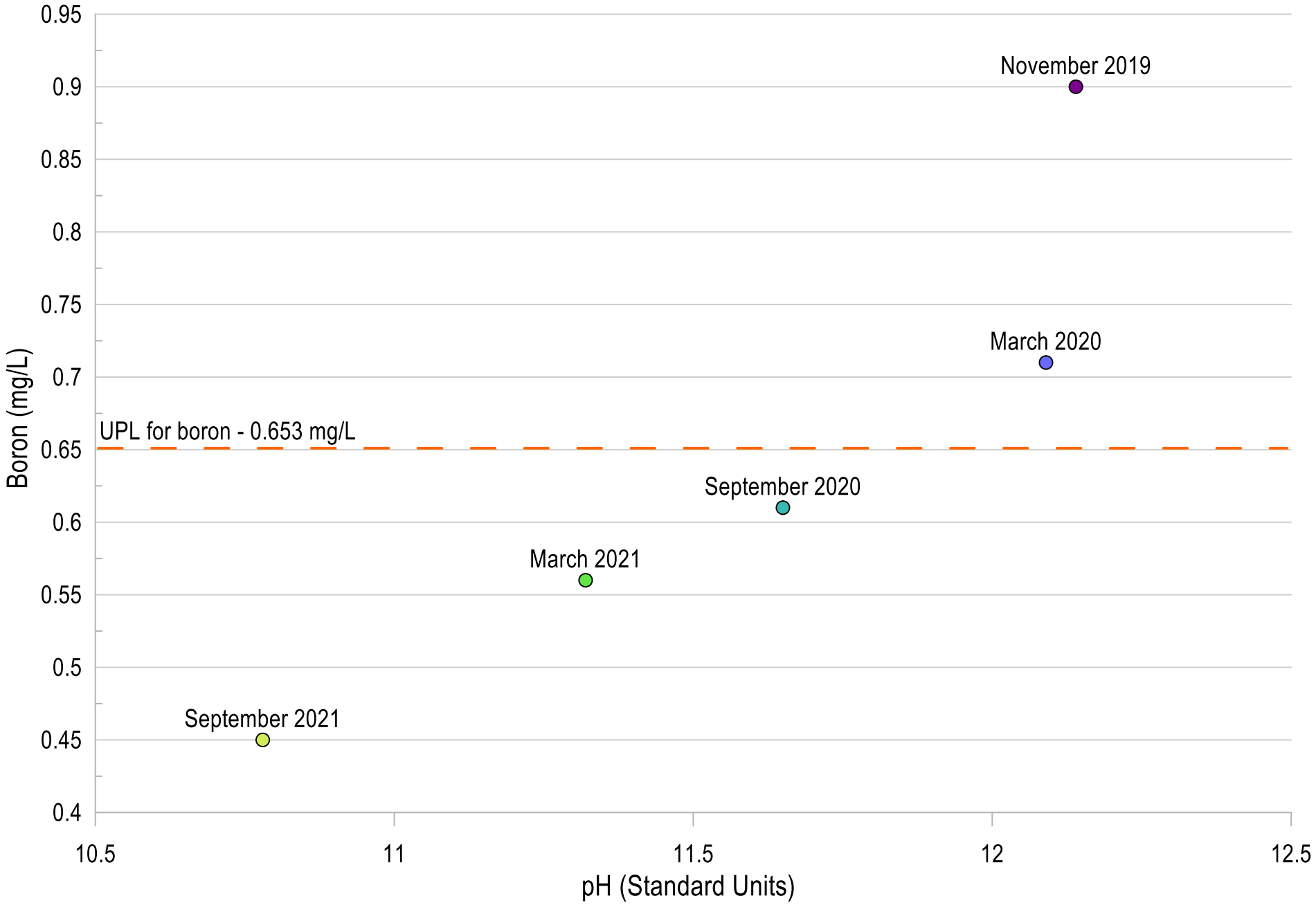
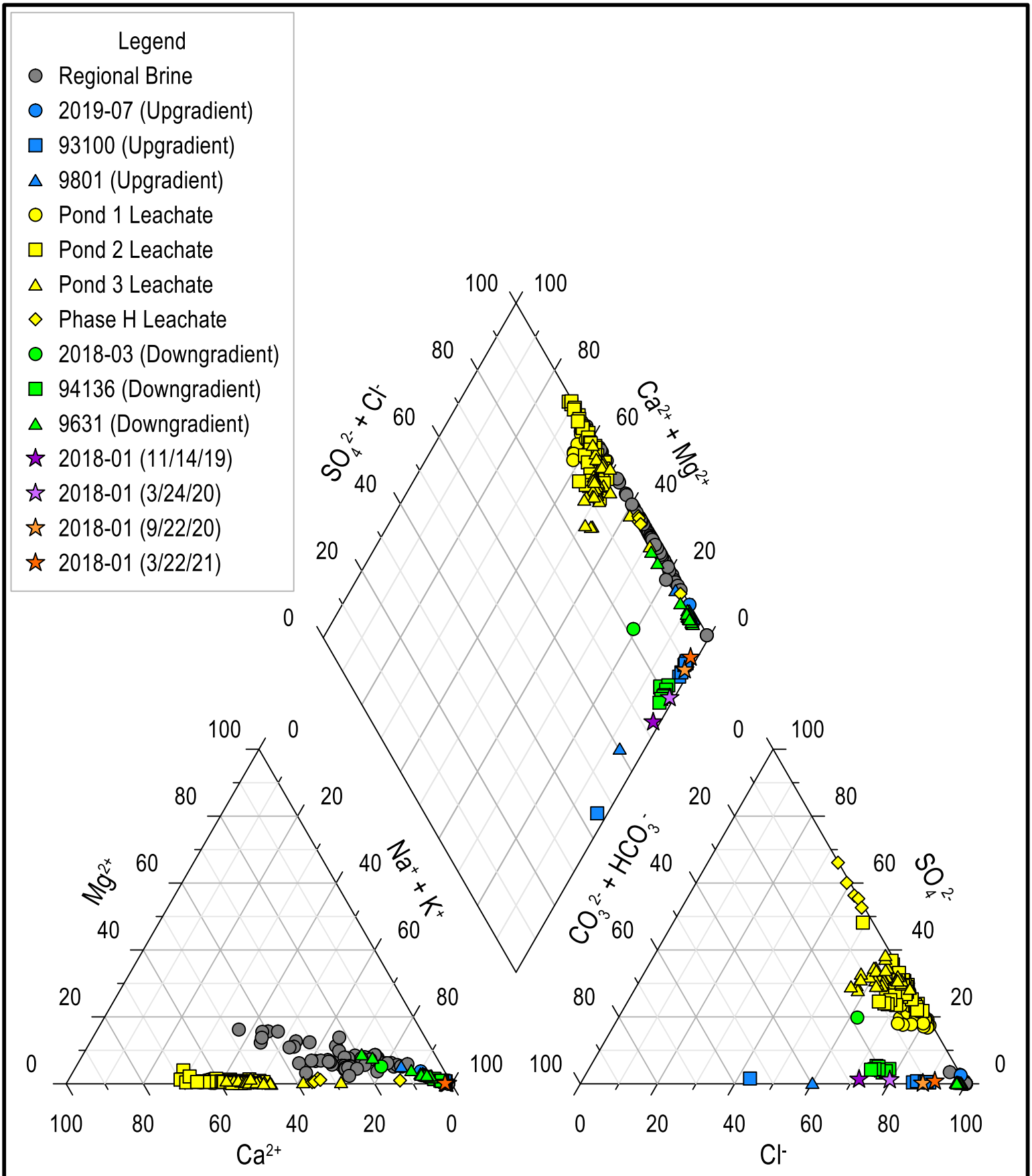


Figure 4-2: Boron and pH at Monitoring Well 2018-01
Gavin Power LLC
Cheshire, Ohio

ERM



NOTES:
1. Date Range: January 2010 to June 2021
2. Only wells with complete data including all 8 piper diagram analytes are presented
3. All monitoring wells are screened in the Cow Run Sandstone

Figure 4-3: 2018-01 Piper Diagram
Gavin Power LLC
Cheshire, Ohio

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APPENDIX A ANALYTICAL SUMMARY

Appendix A
Analytical Data Summary
Residual Waste Landfill and Fly Ash Reservoir
Gavin Power Plant

Program		FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL
Location ID		2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2003	2003
Date		2016-08-24	2016-10-06	2016-12-01	2017-02-02	2017-03-23	2017-05-01	2017-06-12	2017-07-17	2018-03-15	2018-09-13	2019-03-12	2019-09-24	2020-03-24	2020-09-22	2016-12-01	2017-02-08
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L			**417**	**424**					**380**	**370**	**380**	**380**	**390**	**380**	**709**	**680**
Aluminum	mg/L					**7.8 J**	**0.18**	**1.4 B**	**0.32**								
Antimony	mg/L	**2E-05 J**	**1E-05 J**	**3E-05**	**0.0001**	0.002 U	0.002 U	0.002 U	0.002 U							**0.00029**	**0.0002**
Arsenic	mg/L	**0.0018**	**0.00177**	**0.00153**	**0.00192**	**0.0042 J**	**0.0017 J**	**0.0024 J**	**0.0017 J**							**0.00826**	**0.0074**
Barium	mg/L	**0.0244**	**0.0233**	**0.019**	**0.0245**	**0.078 B**	**0.022**	**0.036**	**0.024**							**0.175**	**0.145**
Beryllium	mg/L	2E-05 U	**5E-06 J**	5E-06	2E-05 U	**0.00042 J**	0.001 U	0.001 U	0.001 U							**0.000166**	**0.000162**
Bicarbonate Alkalinity as CaCO3	mg/L									**350**	**330**		**340**	**350**	**350**		
Bicarbonate Alkalinity as HCO3	mg/L											**350**					
Boron	mg/L	**0.289**	**0.278**	**0.296**	**0.283**	**0.33**	**0.33**	**0.34**	**0.35 JB**	**0.32**		**0.34**	**0.31**	**0.29**	**0.32**	**0.461**	**0.462**
Bromide	mg/L			**0.412**	**0.334**	**0.41 J**	5 U	2.5 U	2.5 U							**2.7**	**2.25**
Cadmium	mg/L	2E-05 U	**5E-06 J**	**1E-05**	**5E-05**	0.001 U	0.001 U	0.001 U	0.001 U							**8E-05**	**6E-05**
Calcium	mg/L	**2.7**	**2.78**	**2.64**	**2.57**	**3.9 B**	**2.5**	**3.2**	**2.6**	**2.6**	**2.8**	**2.6**	**2.6**	**2.5**	**2.7**	**8.98**	**8.37**
Carbonate Alkalinity as CaCO3	mg/L									**34**	**34**	**34**	**38**	**41**	**29**		
Chloride	mg/L	**83.9**	**92**	**96.9**	**96.3**	**96**	**60**	**79**	**62**	**86**	**96**	**93**	**100**	**110**	**87**	**643**	**700**
Chromium	mg/L	**0.0018**	**0.0033**	**0.0007**	**0.00263**	**0.06**	**0.0019 J**	**0.0081**	**0.0019 J**							**0.0011**	**0.0839**
Cobalt	mg/L	**0.00011**	**0.000202**	**4.6E-05**	**0.000151**	**0.0052**	**0.00026 J**	**0.0011**	**0.00042 J**							**0.00251**	**0.00382**
Conductivity, Field	uS/cm	**2068**	**2149**	**2094**	**2158**					**2079**				**2014**	**1990**	**3638**	**3676**
Copper	mg/L					**0.01 B**	0.002 U	**0.0048 B**	0.002 U								
Dissolved Oxygen, Field	mg/L	**0.88**	**3.16**	**1.59**	**1.86**					**0.2**						**1.03**	**1.28**
Dissolved Solids, Total	mg/L	**1220**	**1300**	**1290**	**1290**	**1300 J**	**1200 J**	**1300**	**1300 J**	**1300**		**1300**	**1300**	**1300**	**1200**	**1950**	**1960**
Fluoride	mg/L	**1.86**	**2**	**2.26**	**2.13**	**2.6**	**2.2**	**2.4**	**2.2**	**2.2**	**2.3**	**2.2**	**2.5**	**2.4**	**2.1**	**2.7**	**2.36**
Iron	mg/L					**8.3 JB**	**0.19**	**1.5**	**0.39**								
Lead	mg/L	**3.9E-05**	**9.6E-05**	**4.9E-05**	**0.000237**	**0.0052 J**	**0.00056 J**	**0.0011**	**0.00058 J**							**0.00144**	**0.00165**
Lithium	mg/L	**0.02**	**0.023**	**0.017**	**0.014**	**0.021**	**0.016**	**0.018**	**0.016**							**0.024**	**0.019**
Magnesium	mg/L			**0.724**	**0.723**	**2.4 B**	**0.75 J**	**1.1**	**0.8 J**	**0.66 J**	**0.69 J**	**0.76 J**	**0.74 J**	**0.73 J**	**0.64 J**	**2.26**	**2.65**
Manganese	mg/L					**0.084**	**0.01**	**0.026**	**0.014**								
Mercury	mg/L	5E-06 U	5E-06 U	2E-06	5E-06 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U							**1.7E-05**	5E-06 U
Molybdenum	mg/L	**0.0389**	**0.0349**	**0.0331**	**0.0345**	**0.037**	**0.033**	**0.033**	**0.032**							**0.105**	**0.125**
Nickel	mg/L					**0.039**	0.002 U	**0.0056**	**0.0018 J**								
pH, Field	pH units	**7.28**	**8.89**	**8.6**	**8.59**	**8.69**	**8.58**	**8.55**	**8.61**	**8.71**	**8.6**	**8.85**	**8.83**	**8.85**	**8.79**	**8.02**	**7.84**
Potassium	mg/L			**1.05**	**1.49**	**2.6 B**	**0.92 J**	**1.2**	**0.91 J**	**0.84 J**	**1**	**0.93 J**	**0.9 J**	**0.98 J**	**0.87 J**	**2.61**	**3.22**
Radium-226	pCi/L	**0.356**	**0.547**	**0.32**	**0.257**	**0.303**	**0.116**	**0.147**	**0.171**							**0.555**	**0.193**
Radium-226/228	pCi/L	**1.348**	**1.827**	**0.595**	**0.701**	**0.497**	**0.339**	**0.539**	**0.53**							**0.975**	**1.483**
Radium-228	pCi/L	**0.992**	**1.28**	**0.275**	**0.444**	**0.194 U**	**0.224 U**	**0.393**	**0.359**							**0.42**	**1.29**
Redox Potential, Field	mV	**167.6**	**70.5**	**-68**	**88.2**											**4**	**-122.2**
Selenium	mg/L	**7E-05 J**	**4E-05 J**	**5E-05**	0.0001 U	**0.00073 J**	0.005 U	0.005 U	0.005 U							**0.0013**	**0.0011**
Silver	mg/L					**0.0005 J**	0.001 U	0.001 U	0.001 U								
Sodium	mg/L			**414**	**405**	**440 JB**	**480 B**	**460 B**	**440 JB**	**440**	**460**	**470**	**490**	**430**	**450**	**605**	**628**
Strontium	mg/L			**0.199**	**0.19**	**0.22 B**	**0.19 B**	**0.2 B**	**0.19**							**0.593**	**0.567**
Sulfate	mg/L	**493**	**516**	**567**	**521**	**560 J**	**570**	**560**	**560**	**560**	**570**	**570**	**540**	**540**	**530**	**77.8**	**65.3**
Temperature, Field	deg C	**15.16**	**18.6**	**15.2**	**12.4**					**13.1**				**13**	**16**	**12.5**	**13.1**
Thallium	mg/L	**2E-05 J**	**4E-05 J**	1E-05	**5.2E-05**	0.001 U	0.001 U	0.001 U	0.001 U							**4E-05**	**3E-05 J**
Turbidity, Field	NTU	**3.3**	**5.1**	**6.7**	**1.9**	**61.2**	**28.9**	**31.1**	**5.7**	**1.2**	**1.96**		**3**	**16.5**	**0.3**	**123.9**	**265.2**
Vanadium	mg/L					**0.013**			0.005 U								
Zinc	mg/L					**0.026**	0.02 U	0.02 U	0.02 U								

Notes:
FD = Field duplicate sample
N = Normal environmental sample
deg C = Degree Celcius
mg/L = Milligrams per liter
mV = Milivolts
NTU = Nephelometric Turbidity Unit
uS/cm = Microsiemens per centimeter
pCi/L = Picocuries per liter
B: Compound was found in the blank and sample.
J: Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.
U: Indicates the analyte was analyzed for but not detected.
Empty cells = Not analyzed

Appendix A
Analytical Data Summary
Residual Waste Landfill and Fly Ash Reservoir
Gavin Power Plant

Program		FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL
Location ID		2003	2003	2003	2003	2003	2003	2003	2016-03	2016-03	2016-03	2016-03	2016-03	2016-03	2016-03	2016-03	2016-03
Date		2017-03-27	2017-05-01	2017-06-12	2018-10-29	2019-09-21	2020-03-24	2020-09-21	2016-08-24	2016-10-03	2016-12-01	2017-01-31	2017-03-27	2017-04-27	2017-06-07	2017-07-14	2018-03-21
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L				730	740	750	760			482	443					430
Aluminum	mg/L	61 J	34	27	28								0.03 J	0.05 U	0.05 U	0.045 J	
Antimony	mg/L	0.0014 JB	0.00087 J	0.00074 J	0.00058 J				0.00096	0.00041	0.0004	0.00026	0.002 U	0.002 U	0.002 U	0.002 U	
Arsenic	mg/L	0.03	0.019	0.02	0.021				0.00059	0.00092	0.0007	0.00063	0.00058 J	0.001 J	0.00082 J	0.00088 J	
Barium	mg/L	0.41 B	0.39	0.29	0.2				0.0321	0.0383	0.0256	0.0241	0.026 JB	0.024	0.026	0.025	
Beryllium	mg/L	0.0031	0.0022	0.0016	0.0011				1E-05 J	7.2E-05	1E-05 J	6E-06 J	0.001 U	0.001 U	0.001 U	0.001 U	
Bicarbonate Alkalinity as CaCO3	mg/L				710	710	710	730									430
Bicarbonate Alkalinity as HCO3	mg/L																
Boron	mg/L	0.46	0.48	0.51	0.48	0.44	0.41	0.45	0.43	0.35	0.361	0.416	0.43	0.44 B	0.45	0.44	0.43
Bromide	mg/L	2.6 J	2.4 J	2 J							0.614	3.5	0.4 J	2.5 U	2.5 UJ	2.5 U	
Cadmium	mg/L	0.001 U	0.001 U	0.001 U	0.001 U				0.00012	0.0001	0.00016	6E-05	0.001 U	0.001 U	0.001 U	0.001 U	
Calcium	mg/L	12 B	15	12	7.5	5.8	5	5.7	149	129	128	134	140 B	140	150	140	140
Carbonate Alkalinity as CaCO3	mg/L				27	21	34	28									5 U
Chloride	mg/L	650	690	560	430	390	500	440	21.7	21.8	22.7	867	22	23	22 J	22	24
Chromium	mg/L	0.11 B	0.058	0.055	0.037				0.0002	0.0002	0.000162	0.000852	0.00064 JB	0.002 U	0.002 U	0.002 U	
Cobalt	mg/L	0.023	0.014	0.013	0.0075				0.000403	0.000563	0.0005	0.000246	0.00029 J	0.00055 J	0.00019 J	0.00034 J	
Conductivity, Field	uS/cm						2692	2760	1564	1599	1595	1328					1511
Copper	mg/L	0.023 B	0.018 B	0.019 B	0.0076								0.0018 JB	0.002 U	0.002 U	0.002 U	
Dissolved Oxygen, Field	mg/L								4.38	1.15	1.77	2.38					0.26
Dissolved Solids, Total	mg/L	2100 J	2400 J	2100	1800	1600	1400	1600	1090	1080	1020	1990	1100	1100 J	1000	1000 J	1100
Fluoride	mg/L	2.9	2.8	2.7	3.2	3.6	3.4	3.2	0.2	0.18	0.16	2.33	0.21 J	0.19 J	0.21 J	0.19 J	0.24
Iron	mg/L	67 JB	38	36	19								0.087 JB	0.068 J	0.064 J	0.087 J	
Lead	mg/L	0.031 J	0.019	0.018	0.0097				0.000324	0.000456	0.000213	0.000105	0.00026 J	0.001 U	0.001 U	0.001 U	
Lithium	mg/L	0.084	0.05	0.051	0.051				0.03	0.03	0.034	0.031	0.029	0.034	0.029	0.034	
Magnesium	mg/L	9.6 B	7.3	5.9	4	1.5	1.3	1.6			38.6	40.5	40 B	40	46	40	40
Manganese	mg/L	0.21 B	0.17	0.13	0.062								0.051 B	0.1	0.11	0.061	
Mercury	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U				1.1E-05	4E-05	3.9E-05	1.8E-05	0.0002 U	0.0002 U	0.0002 U	0.0002 U	
Molybdenum	mg/L	0.12	0.1	0.12 J	0.16				0.0154	0.00646	0.00649	0.00523	0.0049 J	0.0043 J	0.004 J	0.0038 J	
Nickel	mg/L	0.074 B	0.039	0.04	0.025								0.0015 JB	0.002 U	0.002 U	0.002 U	
pH, Field	pH units	7.94	7.87	7.83	8.06	8.19	8.26	8.21	7.07	6.91	6.99	6.93	6.93	6.9	6.88	6.93	7.03
Potassium	mg/L	11 B	7.2	6	5.9	1.8	1.5	2			4.63	5.03	4.3 JB	4.4	4.8	4.6	4.6
Radium-226	pCi/L	0.937	0.45	1.48	0.909				0.306	0.225	0.266	0.854	0.194	0.195	0.201	0.207	
Radium-226/228	pCi/L	2.93	0.95	2.05	1.71				0.409	1.295	0.44	1.121	0.456	0.541	0.59	1.02	
Radium-228	pCi/L	2 G	0.5 U	0.57 U	0.797				0.103	1.07	0.174	0.267	0.262 U	0.347	0.389	0.816	
Redox Potential, Field	mV								20.9	48.2	50.5	73.5					
Selenium	mg/L	0.0068	0.0034 J	0.0046 J	0.0017 J				0.0002	0.0003	0.0001	0.0001	0.005 U	0.005 U	0.005 U	0.005 U	
Silver	mg/L	0.00074 J	0.00023 J	0.00061 J	0.0005 J								3E-05 J	0.001 U	0.00041 J	0.00044 J	
Sodium	mg/L	730 JB	740 B	730	630	620	590	610			171	156	150 JB	160 B	150 B	150 B	160
Strontium	mg/L	0.84 B	0.94 B	0.69 B	0.52						2.95	3.25	3.6 JB	3.7	4.4 B	3.4 J	
Sulfate	mg/L	84 J	84	86	73	74	72	84	446	445	362	132	390	420	440 J	400	400
Temperature, Field	deg C						14	16	15.8	15.6	12.8	13					12.6
Thallium	mg/L	0.00031 J	0.001 U	0.001 U	0.0002 J				2E-05 J	3E-05 J	2E-05 J	2E-05 J	0.001 U	0.001 U	0.001 U	0.001 U	
Turbidity, Field	NTU	530.1	336.7	236.9	1000	60	24.3	43.1	6.4	9	8.1	4.9	2.1	1.3	1.4	6.4	1
Vanadium	mg/L																
Zinc	mg/L	0.11	0.07	0.059	0.041								0.02 U	0.02 U	0.02 U	0.02 U	

Notes:
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deg C = Degree Celcius
mg/L = Milligrams per liter
mV = Milivolts
NTU = Nephelometric Turbidity Unit
uS/cm = Microsiemens per centimeter
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Appendix A
Analytical Data Summary
Residual Waste Landfill and Fly Ash Reservoir
Gavin Power Plant

Program		FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL
Location ID		2016-03	2016-03	2016-03	2016-03	2016-03	2016-04	2016-04	2016-04	2016-04	2016-04	2016-04	2016-04	2016-04	2016-04	2016-04	2016-04
Date		2018-09-25	2019-03-15	2019-09-24	2020-03-25	2020-09-21	2016-08-24	2017-01-31	2017-03-27	2017-04-27	2017-06-07	2017-07-14	2018-03-22	2018-09-11	2019-03-15	2019-09-24	2020-03-25
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L	**430**	**440 B**	**450**	**500**	**340**		**50.7**						**250**	**290 B**	**300**	**340**
Aluminum	mg/L								**0.39 J**	0.05 U	**0.058**	0.05 U					
Antimony	mg/L						**0.00116**	**0.00033**	**0.00067 JB**	**0.00087 J**	0.002 U	**0.00097 J**		0.002 U	0.002 U		
Arsenic	mg/L						**0.00421**	**0.00259**	**0.0054**	**0.0044 J**	**0.0019 J**	**0.0039 J**		**0.0016 J**	**0.0015 J**		
Barium	mg/L						**0.117**	**0.065**	**0.14 JB**	**0.16**	**0.41**	**0.24**		**0.091**	**0.077**		
Beryllium	mg/L						4E-05 U	**2.2E-05**	0.001 U	0.001 U	0.001 U	**0.00038 J**		**0.00058 J**	**0.00085 J**		
Bicarbonate Alkalinity as CaCO3	mg/L	**430**	**440 B**	**450**	**500**	**340**								**250**	**290 B**	**300**	**340**
Bicarbonate Alkalinity as HCO3	mg/L																
Boron	mg/L	**0.43**	**0.41**	**0.39**	**1.6**	**1.7**	**0.343**	**0.227**	**0.27**	**0.27 B**	**0.36**	**0.3**		**0.38**	**0.39**	**0.39**	**0.87**
Bromide	mg/L							**0.896**	**4 J**	**7.4 J**	**9.3 J**	**4.8 J**			**1**		
Cadmium	mg/L						**5E-05**	**7E-05**	0.001 U	0.001 U	0.001 U	0.001 U		0.001 U	**0.00021 J**		
Calcium	mg/L	**140**	**120**	**130**	**290**	**330**	**9.88**	**47.6**	**22 B**	**18**	**33**	**24**		**87**	**93**	**96**	**120**
Carbonate Alkalinity as CaCO3	mg/L	5 U	5 U	5 U	5 U	5 U								5 U	5 U	5 U	5 U
Chloride	mg/L	**23**	**23**	**24**	**32**	**50**	**1060**	**204**	**820**	**1700**	**2100 J**	**1100**		**240**	**180**	**200**	**380**
Chromium	mg/L						**0.0305**	**0.00651**	**0.0054 JB**	**0.0027**	0.002 U	**0.0016 J**		0.002 U	0.002 U		
Cobalt	mg/L						**0.000641**	**0.000173**	**0.00026 J**	0.001 U	0.001 U	**0.00027 J**		0.001 U	**0.00031 J**		
Conductivity, Field	uS/cm				**2101**	**2232**	**6270**	**1328**					**2138**				**2822**
Copper	mg/L								**0.0024 B**	0.002 U	0.002 U	0.002 U					
Dissolved Oxygen, Field	mg/L						**1.04**	**2.38**					**3.92**				
Dissolved Solids, Total	mg/L	**1000**	**1000**	**1000**	**1300**	**1800**	**2630**	**952**	**1900**	**3300 J**	**3600**	**2400 J**		**1100**	**1200**	**920**	**1500**
Fluoride	mg/L	**0.22**	**0.19**	**0.23**	**0.19**	**0.13**	**1.28**	**0.5**	**1.4**	**1.2**	**1.2 J**	**1.1**		**0.36**	**0.29**	**0.32**	**0.45**
Iron	mg/L								**0.38 JB**	0.1 U	0.1 U	0.1 U					
Lead	mg/L						**0.000238**	**0.000454**	**0.00043 J**	0.001 U	0.001 U	**0.00055 J**		0.001 U	0.001 U		
Lithium	mg/L						**0.236**	**0.035**	**0.044**	**0.072**	**0.066**	**0.066**		**0.053**	**0.05**		
Magnesium	mg/L	**41**	**40**	**42**	**81**	**81**		**6.97**	**3.8 B**	**4.2**	**13**	**5.8**				**38**	**39**
Manganese	mg/L								**0.0083 B**	**0.005**	**0.022**	**0.01**					
Mercury	mg/L						**1.3E-05**	**7E-06**	0.0002 U	0.0002 U	0.0002 U	0.0002 U		0.0002 U	0.0002 U		
Molybdenum	mg/L						**0.0864**	**0.0728**	**0.12 J**	**0.11**	**0.051**	**0.093**		**0.015**	**0.01**		
Nickel	mg/L								**0.0034 B**	0.002 U	0.002 U	**0.0015 J**					
pH, Field	pH units	**7**	**7.13**	**7.27**	**6.93**	**6.82**	**8.4**	**6.93**	**7.79**	**7.82**	**7.8**	**8.22**	**7.75**	**7.62**	**7.62**	**7.71**	**7.76**
Potassium	mg/L	**4.6**	**8.4**	**5.3**	**6.2**	**6.3**		**7.01**	**7.3 JB**	**13**	**7.2**	**9.3**				**8.6**	**7.4**
Radium-226	pCi/L						**0.656**	**0.617**	**0.823**	**0.651**	**0.481**	**0.552 J**		**0.247**	**0.307**		
Radium-226/228	pCi/L						**1.08**	**1.328**	**1.51**	**1.27**	**1.19**	**1.21**		**0.512**	**0.482**		
Radium-228	pCi/L						**0.424**	**0.711**	**0.689**	**0.614**	**0.71**	**0.663**		**0.265 U**	**0.175 U**		
Redox Potential, Field	mV						**-174.3**	**73.5**									
Selenium	mg/L						**0.0021**	**0.0007**	**0.0026 J**	**0.0022 J**	0.005 U	**0.0032 J**		0.005 U	0.005 U		
Silver	mg/L								**0.00016 J**	0.001 U	**0.00017 J**	**7E-05 J**					
Sodium	mg/L	**150**	**190**	**190**	**150**	**110**		**219**	**670 JB**	**710**	**1400 B**	**880 B**				**260**	**380**
Strontium	mg/L							**1.34**	**0.94 JB**	**1.3**	**1.5 B**	**1.5**					
Sulfate	mg/L	**410**	**400**	**360**	**980**	**1200**	**252**	**326**	**330**	**230**	**190 J**	**290**		**420**	**410**	**390**	**520**
Temperature, Field	deg C				**14**	**14**	**15.2**	**13**					**12.3**				**13**
Thallium	mg/L						**3E-05 J**	**1E-05 J**	0.001 U	0.001 U	0.001 U	0.001 U		0.001 U	0.001 U		
Turbidity, Field	NTU	**1.68**		**4**	**1**	**4**	**9.1**	**4.9**	**6.4**	**2.8**	**2.8**	**6.4**	**3**	**1.28**		**4**	**60.9**
Vanadium	mg/L																
Zinc	mg/L								0.02 U	0.02 U	0.02 U	0.02 U					

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Gavin Power Plant

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Location ID		2016-04	2016-05	2016-05	2016-05	2016-05	2016-05	2016-05	2016-05	2016-05	2016-05	2016-06	2016-06	2016-06	2016-06	2016-06	2016-06
Date		2020-09-21	2016-06-08	2016-08-25	2016-10-05	2016-12-01	2017-02-01	2017-03-27	2017-04-27	2017-06-08	2017-07-14	2016-08-25	2016-10-03	2016-12-01	2017-02-01	2017-03-27	2017-04-27
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L	**280**				**229**	**211**							**490**	**554**		
Aluminum	mg/L							**0.3 J**	0.05 U	**0.5**	**0.55**					**3.7 J**	**0.17**
Antimony	mg/L			**0.00015**	**0.0001 J**	**8E-05**	**4E-05 J**	0.002 U	**0.00072 J**	**0.00067 J**	0.002 U	**0.00019**	**0.00025**	**0.00023**	**0.00026**	**0.00047 JB**	**0.00078 J**
Arsenic	mg/L			**0.00078**	**0.00074**	**0.00051**	**0.00028**	0.005 U	0.005 U	**0.00088 J**	**0.00079 J**	**0.00225**	**0.0023**	**0.00195**	**0.00214**	**0.0034 J**	**0.0017 J**
Barium	mg/L			**0.052**	**0.0432**	**0.0382**	**0.0331**	**0.049 JB**	**0.043**	**0.044 B**	**0.038**	**0.0707**	**0.0649**	**0.0525**	**0.0515**	**0.068 JB**	**0.05**
Beryllium	mg/L			**0.000107**	**6E-05 J**	**3.4E-05**	**8E-06 J**	0.001 U	0.001 U	**0.00067 J**	0.001 U	**0.000198**	**0.000143**	**3.4E-05**	**6.8E-05**	0.001 U	0.001 U
Bicarbonate Alkalinity as CaCO3	mg/L	**280**															
Bicarbonate Alkalinity as HCO3	mg/L																
Boron	mg/L	**0.75**		**0.116**	**0.088**	**0.088**	**0.11**	**0.1**	**0.1 JB**	**0.11**	**0.1**	**0.501**	**0.424**	**0.418**	**0.463**	**0.5**	**0.52 B**
Bromide	mg/L					**0.552**	**0.155**	**0.17 J**	**0.15 J**	**0.23 J**	**0.26 J**			**2.18**	**1.85**	**2.4 J**	**2.1 J**
Cadmium	mg/L			**3E-05**	**2E-05 J**	**1E-05 J**	**8E-06 J**	0.001 U	0.001 U	0.001 U	0.001 U	**1E-05 J**	**2E-05 J**	**3E-05**	**4E-05**	**0.00061 J**	0.001 U
Calcium	mg/L	**120**		**40.2**	**35.8**	**45**	**39.7**	**66 B**	**53**	**40**	**31**	**5.87**	**5.51**	**4.6**	**4.45**	**5 B**	**3.5**
Carbonate Alkalinity as CaCO3	mg/L	5 U															
Chloride	mg/L	**1000**		**16.3**	**17.2**	**16.9**	**11.4**	**9.2**	**9.6**	**14**	**16**	**545**	**560**	**515**	**548**	**550**	**550**
Chromium	mg/L			**0.0015**	**0.0012**	**0.000802**	**0.000582**	**0.0017 JB**	0.002 U	**0.0033**	**0.0025**	**0.0092**	**0.077**	**0.0205**	**0.0625**	**0.068 JB**	**0.022**
Cobalt	mg/L			**0.00299**	**0.00267**	**0.00158**	**0.000274**	**0.00042 J**	**0.00028 J**	**0.0011**	**0.00088 J**	**0.00208**	**0.00283**	**0.00156**	**0.00106**	**0.0019**	**0.00068 J**
Conductivity, Field	uS/cm	**6404**		**717**	**670**	**694**	**708**					**2898**	**2931**	**3126**	**2933**		
Copper	mg/L							**0.00073 JB**	0.002 U	**0.0039**	**0.0042 B**					**0.005 JB**	0.002 U
Dissolved Oxygen, Field	mg/L			**7.62**	**8.64**	**7.9**	**9.83**					**0.6**	**0.58**	**1.02**	**1.4**		
Dissolved Solids, Total	mg/L	**2400**		**474**	**406**	**430**	**388**	**500**	**460 J**	**410**	**400 J**	**1560**	**1560**	**1570**	**1540**	**1600**	**1600 J**
Fluoride	mg/L	**0.73**		**0.19**	**0.19**	**0.19**	**0.18**	**0.2**	**0.21**	**0.22**	**0.22**	**5.28**	**5.09**	**4.89**	**5.2**	**6**	**5.9**
Iron	mg/L							**0.45 JB**	0.1 U	**0.93**	**0.78**					**3.4 JB**	**0.24**
Lead	mg/L			**0.00194**	**0.00137**	**0.000848**	**0.000206**	**0.00036 J**	0.001 U	**0.0012**	**0.00077 J**	**0.00371**	**0.00151**	**0.00039**	**0.000607**	**0.0016 J**	0.001 U
Lithium	mg/L			**0.019**	**0.016**	**0.011**	**0.012**	**0.011**	**0.013**	**0.012**	**0.014**	**0.029**	**0.024**	**0.027**	**0.034**	**0.034**	**0.032**
Magnesium	mg/L	**36**				**18.1**	**19.6**	**22 B**	**20**	**19**	**16**			**1.28**	**1.4**	**1.7 B**	**1**
Manganese	mg/L							**0.0099 B**	0.005 U	**0.022**	**0.02**					**0.022 B**	**0.0068**
Mercury	mg/L			**8E-06**	**1E-05**	**1.7E-05**	5E-06 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	**5E-06 J**	**1.1E-05**	**1.6E-05**	**3E-06 J**	0.0002 U	0.0002 U
Molybdenum	mg/L			**0.00109**	**0.00115**	**0.00231**	**0.00071**	**0.00064 J**	0.01 U	**0.0012 J**	0.01 U	**0.0595**	**0.0952**	**0.0674**	**0.0804**	**0.091 J**	**0.076**
Nickel	mg/L							**0.0013 JB**	0.002 U	**0.0026**	**0.0027**					**0.031 B**	**0.029**
pH, Field	pH units	**8.56**	**7.88**	**7.89**	**7.93**	**7.79**	**7.8**	**7.48**	**7.82**		**8.01**	**8.51**	**8.36**	**8.36**	**8.45**	**8.44**	**8.49**
Potassium	mg/L	**16**				**2.72**	**2.35**	**2.4 JB**	**2.3**	**2.5**	**2.3**			**3.45**	**10.5**	**7.2 JB**	**6**
Radium-226	pCi/L			**0.5**	**0.369**	**0.299**	**0.4**	**0.176**	**0.14**	**0.0681 U**	**0.13**	**0.325**	**0.818**	**0.392**	**0.252**	**0.163**	**0.163**
Radium-226/228	pCi/L			**1.027**	**0.703**	**1.429**	**0.40713**	**0.365 U**	**0.0784 U**	**0.0846 U**	**0.575**	**0.756**	**2.268**	**1.052**	**0.604**	**0.381**	**0.395**
Radium-228	pCi/L			**0.527**	**0.334**	**1.13**	**0.00713**	**0.189 U**	**-0.0618 U**	**0.0165 U**	**0.445**	**0.431**	**1.45**	**0.66**	**0.352**	**0.217 U**	**0.232 U**
Redox Potential, Field	mV			**162.5**	**206.5**	**119.4**	**162.7**					**72.2**	**60.6**	**79.4**	**107.6**		
Selenium	mg/L			**0.0005**	**0.0005**	**0.0002**	**0.0001**	0.005 U	0.005 U	0.005 U	0.005 U	**0.0003**	**0.0002**	**0.0003**	**0.0003**	0.005 U	0.005 U
Silver	mg/L							0.001 U	0.001 U	0.001 U	**0.0013**					**0.0012**	0.001 U
Sodium	mg/L	**980**				**84.5**	**69.3**	**71 JB**	**74 B**	**82**	**74 B**			**637**	**499**	**610 JB**	**620**
Strontium	mg/L					**0.879**	**0.89**	**1.1 JB**	**1.1**	**0.87 B**	**0.81**			**0.274**	**0.269**	**0.3 JB**	**0.29**
Sulfate	mg/L	**750**		**138**	**120**	**116**	**132**	**150**	**160**	**140**	**130**	**103**	**96.5**	**95.1**	**94.8**	**110**	**110**
Temperature, Field	deg C	**14**		**18.2**	**16.8**	**13**	**11.8**					**19.1**	**16**	**12.9**	**12**		
Thallium	mg/L			**2E-05 J**	0.0002 U	**2E-05 J**	**3E-05 J**	0.001 U	0.001 U	0.001 U	0.001 U	**3E-05 J**	**2E-05 J**	**2E-05 J**	**2E-05 J**	0.001 U	0.001 U
Turbidity, Field	NTU		**8.5**	**280.1**	**160.9**	**56.6**	**9.6**	**5.4**	**13.6**		**7.7**	**99.6**	**45.2**	**52.9**	**48.5**	**43.5**	**68.6**
Vanadium	mg/L																
Zinc	mg/L							0.02 U	0.02 U	0.02 U	0.02 U					**0.0097 J**	0.02 U

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Location ID		2016-06	2016-06	2016-06	2016-06	2016-06	2016-06	2016-06	2016-06	2016-06	2016-06	2016-07	2016-07	2016-07	2016-07	2016-07	2016-07
Date		2017-06-08	2017-07-14	2018-03-22	2018-09-25	2018-09-25	2019-03-26	2019-09-22	2020-03-15	2020-03-15	2020-09-17	2016-08-24	2016-10-05	2016-11-30	2017-01-31	2017-03-22	2017-04-27
Sample Type		N	N	N	FD	N	N	N	FD	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L				**490**	**490**	**510**	**500**	**510**	**510**	**480**			**514**	**483**		
Aluminum	mg/L	**3.6**	**1.7**													**57 J**	**9.8**
Antimony	mg/L	0.002 U	0.002 U									**0.00126**	**0.00091**	**0.00079**	**0.00045**	**0.0015 J**	**0.0024**
Arsenic	mg/L	**0.0026 J**	**0.0024 J**									**0.00772**	**0.00705**	**0.00666**	**0.0042**	**0.016**	**0.0034 J**
Barium	mg/L	**0.064 B**	**0.059**									**0.107**	**0.141**	**0.115**	**0.188**	**0.83 JB**	**0.7**
Beryllium	mg/L	**0.00035 J**	0.001 U									**0.000368**	**0.00027**	**0.000183**	**0.000428**	**0.0026**	**0.00091 J**
Bicarbonate Alkalinity as CaCO3	mg/L				**460**	**470**	**460**	**470**	**470**	**470**	**460**						
Bicarbonate Alkalinity as HCO3	mg/L																
Boron	mg/L	**0.52**	**0.5**		**0.48**	**0.49**	**0.5**	**0.45**	**0.46**	**0.48**	**0.46**	**0.313**	**0.297**	**0.348**	**0.365**	**0.4**	**0.42 B**
Bromide	mg/L	**2.3 J**	**2.1 J**											**5.48**	**0.308**	**4.5 J**	**8 J**
Cadmium	mg/L	0.001 U	0.001 U									**7E-05**	**8E-05 J**	**0.0001**	**8E-05**	0.001 U	0.001 U
Calcium	mg/L	**4.1**	**4**		**4.4**	**4.8**	**4.9**	**4.4**	**4.1**	**4.2**	**5.1**	**13.3**	**11.5**	**8.2**	**9.9**	**15 B**	**25**
Carbonate Alkalinity as CaCO3	mg/L				**26**	**23**	**41**	**35**	**36**	**36**	**24**						
Chloride	mg/L	**570**	**540**		**600**	**620**	**580**	**540**	**650**	**660**	**630**	**421**	**609**	**643**	**23.6**	**1000**	**1900**
Chromium	mg/L	**0.058 J**	**0.062**									**0.0015**	**0.0022**	**0.00163**	**0.00322**	**0.063 J**	**0.011**
Cobalt	mg/L	**0.0038**	**0.0018**									**0.00105**	**0.000905**	**0.000573**	**0.00167**	**0.016**	**0.0028**
Conductivity, Field	uS/cm			**2792**					**2888**	**2888**	**2979**	**2883**	**3250**	**2246**	**3388**		
Copper	mg/L	**0.0071**	**0.007 B**													**0.044 JB**	**0.0079**
Dissolved Oxygen, Field	mg/L			**0.38**								**3.47**	**3.81**	**3.75**	**1.94**		
Dissolved Solids, Total	mg/L	**1700**	**1600 J**		**1400**	**1400**	**1600**	**1500**	**1600**	**1600**	**1400**	**1740**	**1850**	**1900**	**1000**	**2300**	**3900 J**
Fluoride	mg/L	**6.3**	**6.1**		**5.8**	**5.7**	**5.6**	**5.8**	**5.5**	**5.5**	**5.5**	**1.89**	**2.04**	**1.94**	**0.18**	**2.3**	**1.6**
Iron	mg/L	**3.3**	**1.7**													**49 JB**	**8.5**
Lead	mg/L	**0.0013**	**0.00083 J**									**0.00336**	**0.00292**	**0.00215**	**0.00336**	**0.031 J**	**0.0054**
Lithium	mg/L	**0.031**	**0.032**									**0.235**	**0.193**	**0.202**	**0.163**	**0.16**	**0.062**
Magnesium	mg/L	**1.8**	**1.3**		**1.4**	**1.4**	**1.6**	**1.4**	**1.3**	**1.4**	**1.5**			**1.36**	**2.83**	**11 B**	**8.3**
Manganese	mg/L	**0.019**	**0.018**													**0.24 B**	**0.075**
Mercury	mg/L	0.0002 U	0.0002 U									**1.2E-05**	**1.7E-05**	**8E-06**	**5E-05 J**	0.0002 U	0.0002 U
Molybdenum	mg/L	**0.074**	**0.073**									**0.0808**	**0.0841**	**0.0953**	**0.0689**	**0.092 J**	**0.056**
Nickel	mg/L	**0.13**	**0.05**													**0.043**	**0.0086**
pH, Field	pH units	**8.39**	**8.28**	**8.43**		**8.24**	**8.52**	**8.59**	**8.47**	**8.47**	**8.52**	**10.86**	**10.56**	**10.61**	**10.01**	**9.94**	**9.44**
Potassium	mg/L	**5.6**	**4.8**		**3**	**3.4**	**4.8**	**3.8**	**2.7**	**2.9**	**2.9**			**33.9**	**24.1**	**23 JB**	**6.5**
Radium-226	pCi/L	**0.195**	**0.152**									**0.427**	**0.977**	**1.13**	**1.18**	**2.63**	**6.4**
Radium-226/228	pCi/L	**0.362 U**	**0.651**									**0.427**	**3.077**	**2.17**	**2.84**	**4.35**	**12.7**
Radium-228	pCi/L	**0.167 U**	**0.498**										**2.1**	**1.04**	**1.66**	**1.72 G**	**6.29 G**
Redox Potential, Field	mV											**6.4**	**63**	**20.4**	**22**		
Selenium	mg/L	0.005 U	**0.001 J**									**0.0008**	**0.001**	**0.0007**	**0.0008**	**0.004 J**	**0.0015 J**
Silver	mg/L	**9.1E-05 J**	**0.00017 J**													**0.00078 J**	**0.00019 J**
Sodium	mg/L	**590**	**600 B**		**600**	**610**	**600**	**590**	**600**	**610**	**610**			**562**	**635**	**930 JB**	**1300**
Strontium	mg/L	**0.24 B**	**0.27**											**0.624**	**0.815**	**1.3 JB**	**2.3**
Sulfate	mg/L	**120**	**110**		**100**	**100**	**110**	**110**	**100**	**100**	**99**	**229**	**235**	**178**	**371**	**120**	**99**
Temperature, Field	deg C			**13.3**					**13**	**13**	**14**	**15.6**	**15.3**	**14.1**	**12.8**		
Thallium	mg/L	0.001 U	0.001 U									**8.4E-05**	**9E-05 J**	**4E-05 J**	**6.1E-05**	**0.00052 J**	0.001 U
Turbidity, Field	NTU	**59.1**	**30.7**	**49**		**43.9**		**71**	**37.6**	**37.6**	**24.1**	**213**	**98.2**	**88.1**	**455.1**	**850**	**13721**
Vanadium	mg/L															**0.066**	
Zinc	mg/L	0.02 U	0.02 U													**0.12**	**0.02**

Notes:
FD = Field duplicate sample
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mV = Milivolts
NTU = Nephelometric Turbidity Unit
uS/cm = Microsiemens per centimeter
pCi/L = Picocuries per liter
B: Compound was found in the blank and sample.
J: Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.
U: Indicates the analyte was analyzed for but not detected.
Empty cells = Not analyzed

Appendix A
Analytical Data Summary
Residual Waste Landfill and Fly Ash Reservoir
Gavin Power Plant

Program		FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL
Location ID		2016-07	2016-07	2016-07	2016-07	2016-07	2016-07	2016-07	2016-07	2016-08	2016-08	2016-08	2016-08	2016-08	2016-08	2016-08	2016-08
Date		2017-08-10	2018-04-05	2018-10-23	2019-03-26	2019-09-22	2020-03-15	2020-03-24	2020-09-17	2016-08-24	2016-10-05	2016-11-30	2017-01-31	2017-03-22	2017-04-27	2017-06-07	2018-09-25
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L		360	300	430	320	360	320	350			1580	1400				1700
Aluminum	mg/L	40												4.7 J	0.39	8.1	
Antimony	mg/L	0.0017 JB								0.00134	0.00083	0.00095	0.00078	0.0012 J	0.0051	0.0013 J	
Arsenic	mg/L	0.016								0.00795	0.00691	0.00652	0.00489	0.0054	0.0075	0.014	
Barium	mg/L	1.3								0.312	0.279	0.416	0.446	0.97 JB	0.7	0.76	
Beryllium	mg/L	0.0028								4E-05 U	0.000182	0.000123	5.9E-05 J	0.001 U	0.001 U	0.005 U	
Bicarbonate Alkalinity as CaCO3	mg/L		190	120	72	59	45	5 U	160								5 U
Bicarbonate Alkalinity as HCO3	mg/L																
Boron	mg/L	0.44	0.45	0.42	0.38	0.39	0.41	0.28	0.41	0.318	0.286	0.294	0.279	0.22	0.28 B	0.32	0.1
Bromide	mg/L	5.5										5.56	2.93	3.1 J	25 U	5 J	
Cadmium	mg/L	0.00059 J								2E-05 J	3E-05 J	5E-05	1E-05 J	0.001 U	0.001 U	0.001 U	
Calcium	mg/L	41	12	12	6.3	7.8	6	34	9.7	33.8	48.9	57	80.6	190 B	140	140	340
Carbonate Alkalinity as CaCO3	mg/L		170	180	350	260	310	110	190								140
Chloride	mg/L	1200	1200	1100	810	1000	1100	970	1100	452	645	650	879	700	890	1200 J	920
Chromium	mg/L	0.059								0.0012	0.0033	0.00434	0.00374	0.011 J	0.0027	0.015 J	
Cobalt	mg/L	0.015								0.000353	0.00278	0.00172	0.00095	0.0024	0.00039 J	0.0037	
Conductivity, Field	uS/cm		4913				3442	4166	4034	8521	8800	5904	7708				
Copper	mg/L	0.04 B												0.026 JB	0.019	0.043 B	
Dissolved Oxygen, Field	mg/L		2.48							10.52	5.81	6.2	4.23				
Dissolved Solids, Total	mg/L	2500 J	2300	1800	2100	1900	1800 J	1900	1800	2480	2660	2730	2750	2700	2900 J	3000	2400
Fluoride	mg/L	2.6	2.8	2.9	2.6	3.3	3.1	2.5	3.1	1.92	1.85	1.56	2.03	2	1.8 J	2.3 J	1.4
Iron	mg/L	47												4.5 JB	0.1 U	8.6	
Lead	mg/L	0.036 B								0.000143	0.00216	0.00207	0.000987	0.0044 J	0.001 U	0.006	
Lithium	mg/L	0.19								0.665	0.6	0.702	0.652	0.85	0.75	0.64	
Magnesium	mg/L	12	3.9	3.4	2.6	2.3	2.3	0.88 J	3.1			0.41	0.162	0.75 JB	1 U	1.4	1 U
Manganese	mg/L	0.31												0.031 B	0.005 U	0.051	
Mercury	mg/L	0.0002 U								2.4E-05	7E-06	3.7E-05	9E-06	0.0002 U	0.0002 U	0.0002 U	
Molybdenum	mg/L	0.11 B								0.121	0.0735	0.0982	0.102	0.094 J	0.12	0.14	
Nickel	mg/L	0.051												0.01	0.004	0.013	
pH, Field	pH units	9.1	9.49	9.75	10.41	10.4	9.85	11.98	9.65	12.52	12.41	12.59	12.45	12.65	12.35	12.42	12.45
Potassium	mg/L	19	6.6	6.8	8.4	4.4	4.3	7.4	4.3			92.4	99.3	110 JB	77	59	44
Radium-226	pCi/L	3.74 J								0.768	1.06	0.975	1.43	4.8	4.25	2.11	
Radium-226/228	pCi/L	8.09 J								1.898	2.97	2.005	2.62	6.4	5.53	2.43	
Radium-228	pCi/L	4.34 G								1.13	1.91	1.03	1.19	1.6	1.27	0.319 U	
Redox Potential, Field	mV									-71.6	-38.5	-81.2	-89.5				
Selenium	mg/L	0.0052								0.0028	0.0022	0.0019	0.0012	0.002 J	0.0022 J	0.0043 J	
Silver	mg/L	0.0037												0.001 U	0.001 UJ	0.00026 J	
Sodium	mg/L	1000	920	850	840	760	730	640	790			704	747	920 JB	1100	1200 B	830
Strontium	mg/L	2.8 B										3.59	4.23	7.2 JB	6.7	5.7 B	
Sulfate	mg/L	77	60	49	46	36	36	30	27	133	126	120	90.4	71	70	89 J	27
Temperature, Field	deg C		13.8				13	14	15	16	16.2	13.8	13.1				
Thallium	mg/L	0.00066 J								9E-05 J	7E-05 J	5E-05 J	3E-05 J	0.001 U	0.001 U	0.001 U	
Turbidity, Field	NTU	1037	174	81.4		32	9.8	14.1	7.1	871	253.7	121.7	110.9	108.8	627.3	380.4	17.6
Vanadium	mg/L													0.017			
Zinc	mg/L	0.12												0.1 U	0.02 U	0.03	

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mV = Milivolts
NTU = Nephelometric Turbidity Unit
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Appendix A
Analytical Data Summary
Residual Waste Landfill and Fly Ash Reservoir
Gavin Power Plant

Program		FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL
Location ID		2016-08	2016-08	2016-08	2016-08	2016-08	2016-09	2016-09	2016-09	2016-09	2016-09	2016-09	2016-09	2016-09	2016-09	2016-09	2016-09
Date		2019-03-26	2019-09-22	2020-03-15	2020-03-24	2020-09-17	2016-08-23	2016-10-03	2016-11-29	2017-01-30	2017-03-21	2017-04-25	2017-06-06	2017-07-12	2018-03-22	2018-09-13	2019-09-24
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L	**2000**	**1800**	**1100**	**1900**	**620**			**1250**	**1830**	**1400**					**820**	**1100**
Aluminum	mg/L											**1.3**	**3.3**	**1.9 B**			
Antimony	mg/L						**0.00076**	**0.00087**	**0.00082**	**0.00078**	**0.0014 J**	**0.0012 J**	0.02 U	**0.001 JB**			
Arsenic	mg/L						**0.0117**	**0.0145**	**0.0149**	**0.0144**	**0.026 J**	**0.016**	**0.016 J**	**0.016**			
Barium	mg/L						**0.684**	**0.566**	**0.49**	**0.433**	**0.42 JB**	**0.52**	**0.53**	**0.52**			
Beryllium	mg/L						**8.5E-05**	**3E-05 J**	**2E-05 J**	2E-05 U	0.001 U	0.001 U	0.001 UJ	0.001 U			
Bicarbonate Alkalinity as CaCO3	mg/L	5 U	5 U	5 U	5 U	5 U										5 U	5 U
Bicarbonate Alkalinity as HCO3	mg/L																
Boron	mg/L	**0.056 J**	**0.071 J**	**0.24**	**0.029 J**	**0.16**	**0.093**	**0.411**	**0.126**	**0.131**	**0.19**	**0.16 J**	**0.18 B**	**0.16 B**			**0.24**
Bromide	mg/L								**6.45**	**5.69**	**5.8 J**	50 U	**7.5**	**5.8 J**			
Cadmium	mg/L						6E-05 U	6E-05 U	**4E-05 J**	**1E-05 J**	0.001 U	0.001 U	0.01 U	0.001 U			
Calcium	mg/L	**450**	**390**	**190**	**510**	**190**	**78.6**	**202**	**49.7**	**42.3**	**30 B**	**35**	**47**	**55**		**16**	**18**
Carbonate Alkalinity as CaCO3	mg/L	**70**	**100**	**63**	**48**	**100**										**180**	**120**
Chloride	mg/L	**510**	**610**	**1500**	**270**	**1400**	**1500**	**1520**	**1490**	**1520**	**1600**	**2000**	**1700**	**1600**		**1800**	**1200**
Chromium	mg/L						**0.0455**	**0.0371**	**0.0299**	**0.0256**	**0.027 J**	**0.025**	**0.029 J**	**0.025**			
Cobalt	mg/L						**0.00056**	**0.000324**	**0.000245**	**0.000208**	**0.00092 J**	**0.00032 J**	0.01 U	**0.00071 J**			
Conductivity, Field	uS/cm			**8027**	**8693**	**7699**	**14047**	**13957**	**15285**	**12613**					**9465**		
Copper	mg/L											**0.013**	**0.022 B**	**0.017**			
Dissolved Oxygen, Field	mg/L						**5.1**	**2.86**	**2.39**	**2.91**					**0.32**		
Dissolved Solids, Total	mg/L	**2900**	**2700**	**2300 J**	**1700**	**2300**	**4820**	**4480**	**4180**	**3900**	**4100**	**4300 J**	**4300**	**3900 J**			**2100**
Fluoride	mg/L	**0.99**	**1.1**	**1.6**	**0.69**	**1.4**	**1.67**	**1.58**	**1.02**	**1.39**	**1.9 J**	**2.1 J**	**1.8**	**1.5 J**		**2**	**1.9**
Iron	mg/L											0.1 U	**1.2**	**0.55**			
Lead	mg/L						**0.00215**	**0.000743**	**0.000281**	**0.000118**	**0.0021 J**	0.001 U	**0.001**	**0.00068 J**			
Lithium	mg/L						**0.561**	**0.082**	**0.392**	**0.324**	**0.23**	**0.3**	**0.27**	**0.25**			
Magnesium	mg/L	1 U	1 U	1 U	1 U	1 U			**0.058**	**0.006 J**		1 U	10 U	**0.22 J**		1 U	**1.2**
Manganese	mg/L										**0.016 B**	0.005 U	0.05 U	**0.0041 J**			
Mercury	mg/L						**1.2E-05**	**4E-06 J**	**6E-06**	**5E-06 J**	0.0002 U	0.0002 U	0.0002 U	0.0002 U			
Molybdenum	mg/L						**0.18**	**0.155**	**0.149**	**0.137**	**0.19 J**	**0.17**	**0.17**	**0.16**			
Nickel	mg/L											**0.0015 J**	0.02 U	**0.0031**			
pH, Field	pH units	**12.67**	**12.43**	**11.89**	**12.67**	**12**	**12.49**	**12.6**	**12.64**	**12.66**	**12.55**	**12.44**	**12.46**	**12.49**	**12.59**	**12.07**	**12.45**
Potassium	mg/L	**48**	**44**	**23**	**36**	**17**			**55**	**48.8**	**28 JB**	**31**	**29**	**24**		**15**	**13**
Radium-226	pCi/L						**1.06**	**0.889**	**1.34**	**1.65**	**1.95**	**1.33**	**1.93**	**1.83 J**			
Radium-226/228	pCi/L						**1.924**	**2.559**	**1.729**	**2.472**	**2.69**	**2.29**	**3.76**	**2.61 J**			
Radium-228	pCi/L						**0.864**	**1.67**	**0.389**	**0.822**	**0.744 U**	**0.966**	**1.83**	**0.772 J**			
Redox Potential, Field	mV						**-68.6**	**-135.4**	**-113.7**	**-112.6**							
Selenium	mg/L						**0.0042**	**0.0038**	**0.0037**	**0.0029**	**0.0051 J**	**0.0029 J**	0.05 U	**0.0034 JB**			
Silver	mg/L											0.001 U	**0.00031 J**	**0.00074 J**			
Sodium	mg/L	**680**	**740**	**1100**	**310**	**1100**			**591**	**997**	**1700 JB**	**1600**	**1700 B**	**1500**		**1600**	**1200**
Strontium	mg/L								**2.74**	**2.34**	**1.8 JB**	**2.6**	**1.4 B**	**2.2**			
Sulfate	mg/L	**14**	**16**	**28**	**12**	**23**	**77.1**	**72.2**	**73**	**61.7**	**64**	**88 J**	**65**	**85**		**74**	**56**
Temperature, Field	deg C			**12**	**14**	**15**	**15.9**	**15**	**13.5**	**9.3**					**12.8**		
Thallium	mg/L						**7E-05 J**	**4E-05 J**	0.0002 U	**4E-05 J**	0.001 U	0.001 U	0.001 U	0.001 U			
Turbidity, Field	NTU		**94**	**6.2**	**4.2**	**4.1**	**8.7**	**8.6**	**6.8**	**2.1**	**22.3**	**56.3**	**35.1**	**61.3**	**9**	**20.8**	**103**
Vanadium	mg/L																
Zinc	mg/L											0.02 U	0.2 U	0.02 U			

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Appendix A
Analytical Data Summary
Residual Waste Landfill and Fly Ash Reservoir
Gavin Power Plant

Program		FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL
Location ID		2016-09	2016-09	2016-10	2016-10	2016-10	2016-10	2016-10	2016-10	2016-10	2016-10	2016-10	2016-10	2016-10	2016-10	2016-10	2016-10
Date		2020-03-12	2020-09-14	2016-08-23	2016-10-03	2016-11-29	2017-01-30	2017-03-21	2017-04-25	2017-06-06	2017-07-12	2018-04-06	2018-10-01	2019-03-27	2019-09-24	2020-03-30	2020-09-14
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	FD
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L	**1400**	**1400**			**217**	**199**	**170**				**180 B**	**140**	**150**	**130**	**150**	**120**
Aluminum	mg/L								0.05 U	0.5 U	**0.035 JB**						
Antimony	mg/L			**0.00027**	**9E-05 J**	**0.0002 J**	**0.00023**	0.002 U	0.002 U	0.02 U	0.002 U						
Arsenic	mg/L			**0.00323**	**0.00281**	**0.00304**	**0.00443**	**0.0037 J**	**0.0025 J**	0.05 U	**0.0039 J**						
Barium	mg/L			**0.235**	**0.183**	**0.162**	**0.339**	**0.17 JB**	**0.17**	**0.25**	**0.24**						
Beryllium	mg/L			8E-05 U	0.0001 U	0.0002 U	**1E-05 J**	0.001 U	0.001 U	0.001 UJ	0.001 U						
Bicarbonate Alkalinity as CaCO3	mg/L	5 U	5 U									**180 B**	**140**	**150**	**130**	**150**	**120**
Bicarbonate Alkalinity as HCO3	mg/L																
Boron	mg/L	**0.21**	**0.13**	**0.449**	**0.386**	**0.438**	**0.421**	**0.56**	**0.49**	**0.57 B**	**0.54 B**	**0.55**	**0.52**	**0.51**	**0.47**	**0.48**	**0.5**
Bromide	mg/L					**30.4**	**35.8**	**35**	**53**	**50**	**49**						
Cadmium	mg/L			**4E-05 J**	0.0001 U	**4E-05 J**	**0.00026**	0.001 U	0.001 U	0.01 U	0.001 U						
Calcium	mg/L	**230**	**79**	**179**	**209**	**254**	**344**	**380 B**	**390**	**440**	**500**	**610**	**650**	**550**	**710**	**730**	**680**
Carbonate Alkalinity as CaCO3	mg/L	**120**	**180**									50 U	5 U	5 U	5 U	5 U	5 U
Chloride	mg/L	**630**	**760**	**3600**	**5000**	**6040**	**7380**	**7800**	**12000**	**11000**	**12000**	**14000**	**16000**	**13000**	**15000**	**18000**	**16000**
Chromium	mg/L			**0.0007**	**0.0003**	**0.00461**	**0.00983**	**0.00071 J**	0.002 U	0.02 U	**0.0011 J**						
Cobalt	mg/L			**0.000699**	**0.000869**	**0.00198**	**0.00275**	**0.0015**	**0.0013**	**0.0069 J**	**0.0046**						
Conductivity, Field	uS/cm	**8091**	**8864**	**8802**	**16158**	**15133**	**19419**					**35660**				**36786**	**37634**
Copper	mg/L								0.002 U	0.02 U	0.002 U						
Dissolved Oxygen, Field	mg/L			**3.72**	**2.77**	**6.96**	**4.79**					**1.53**					
Dissolved Solids, Total	mg/L	**2300**	**2200**	**6820**	**9040**	**11000**	**12600**	**9600**	**17000 J**	**17000**	**15000 J**	**20000**	**23000**	**16000**	**24000**	**37000**	**26000**
Fluoride	mg/L	**1.1**	**0.92**	**0.66**	**0.5**	**0.5 J**	**0.7 J**	2.5 U	5 U	1.3 U	2.5 U	5 U	2.5 U	**2.9**	2.5 U	2.5 U	**0.31 J**
Iron	mg/L								**0.13**	**2.9**	**2.8**						
Lead	mg/L			**0.00143**	**0.000325**	**0.000492**	**0.00257**	**0.00056 J**	0.001 U	0.001 U	0.001 U						
Lithium	mg/L			**0.138**	**0.142**	**0.189**	**0.246**	**0.21**	**0.23**	**0.29**	**0.29**						
Magnesium	mg/L	**0.75 J**	**0.33 J**			**67.4**	**91.1**		**110**	**160**	**160**	**200**	**210**	**190**	**330**	**220**	**230**
Manganese	mg/L							**0.68 B**	**0.52**	**1.8**	**1.4**						
Mercury	mg/L			**4E-06 J**	5E-06 U	**2E-06 J**	**3E-06 J**	0.0002 U	0.0002 U	0.0002 U	0.0002 U						
Molybdenum	mg/L			**0.0367**	**0.0128**	**0.0278**	**0.0258**	**0.011 J**	**0.015**	**0.011 J**	**0.016**						
Nickel	mg/L								**0.0053**	0.02 U	**0.024**						
pH, Field	pH units	**12.61**	**12.6**	**9.79**	**7.48**	**8.29**	**7.68**	**7.31**	**7.21**	**7.51**	**7.86**	**7.1**	**7.11**	**7.25**	**7.27**	**7.35**	**7.46**
Potassium	mg/L	**21**	**12**			**30.8**	**42.9**	**26 JB**	**28**	**29**	**29**	**28**	**29**	**31 F1**	**42**	**31**	**32**
Radium-226	pCi/L			**1.31**	**1.47**	**1.32**	**0.874**	**0.869**	**1.05**	**1.47**	**1.61 J**						
Radium-226/228	pCi/L			**2.85**	**2.5**	**3.15**	**2.304**	**1.71**	**2.19**	**3.93**	**4.91 J**						
Radium-228	pCi/L			**1.54**	**1.03**	**1.83**	**1.43**	**0.839**	**1.14**	**2.45**	**3.29**						
Redox Potential, Field	mV			**70.1**	**104.1**	**122.9**	**103.2**										
Selenium	mg/L			**0.001**	**0.0002 J**	**0.0005 J**	**0.0003**	**0.0015 J**	0.005 U	0.05 U	**0.0014 JB**						
Silver	mg/L								0.001 U	**0.0008 J**	**0.00062 J**						
Sodium	mg/L	**870**	**930**			**1510**	**1370**	**4700 JB**	**4400**	**5900 B**	**6000**	**7300**	**7100 B**	**6900**	**7600**	**7400**	**7900**
Strontium	mg/L					**12.1**	**16.2**	**20 JB**	**21**	**27 B**	**26**						
Sulfate	mg/L	**71**	**53**	**874**	**857**	**897**	**834**	**790**	**1100**	**640**	**670**	**540**	**560**	**550**	**350**	**400**	**320**
Temperature, Field	deg C	**13**	**14**	**16.8**	**15.9**	**15**	**11.3**					**13.5**				**14**	**15**
Thallium	mg/L			**7E-05 J**	0.0002 U	5E-05 U	**8E-05 J**	0.001 U	0.001 U	0.001 U	0.001 U						
Turbidity, Field	NTU	**90.4**	**37.7**	**30.6**	**8.7**	**2.4**	**21.9**	**4.1**	**77.3**	**10.1**	**10.3**	**4**	**2.62**		**7**	**14**	**1.3**
Vanadium	mg/L																
Zinc	mg/L								0.02 U	0.2 U	0.02 U						

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Gavin Power Plant

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Location ID		2016-10	2016-11	2016-11	2016-11	2016-11	2016-11	2018-01	2018-01	2018-01	2018-02	2018-02	2018-02	2018-03	2018-03	2018-03	2018-04
Date		2020-09-14	2016-08-23	2016-08-26	2017-01-30	2017-03-21	2017-04-25	2019-11-14	2020-03-24	2020-09-22	2019-11-14	2020-04-08	2020-11-16	2019-11-14	2020-04-08	2020-11-16	2019-11-14
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L	**120**			**326**	**290**		**800**	**680**	**460**		**260**					
Aluminum	mg/L						0.05 U						**15**			**5.8**	
Antimony	mg/L		**0.00533**		**0.00068**	0.002 U	**0.00081 J**						**0.001 J**			**0.0023**	
Arsenic	mg/L		**0.0038**		**0.00586**	**0.0049 J**	**0.0022 J**						**0.011**			**0.012**	
Barium	mg/L		**0.154**		**0.681**	**0.33 JB**	**0.41**						**1.6**			**0.48**	
Beryllium	mg/L		4E-05 U		**9.2E-05**	0.001 U	0.001 U						**0.00085 J**			**0.0004 J**	
Bicarbonate Alkalinity as CaCO3	mg/L	**120**						5 U	5 U	5 U		**260**					
Bicarbonate Alkalinity as HCO3	mg/L																
Boron	mg/L	**0.48**	**0.278**		**0.3**	**0.36**	**0.35**	**0.9**	**0.71**	**0.61**	**0.35**	**0.32**	**0.38**	**0.31**	**0.31**	**0.32**	
Bromide	mg/L				**10.5**	**10**	**11 J**						**16**			**5.6**	
Cadmium	mg/L		**0.0002**		**0.00027**	**0.00035 J**	0.001 U						0.001 U			**0.00027 J**	
Calcium	mg/L	**700**	**10.3**		**25**	**28 B**	**34**	**14 B**	**13**	**20**	**49 B**	**54**	**57**	**120 B**	**34**	**80**	
Carbonate Alkalinity as CaCO3	mg/L	5 U						**370**	**370**	**340**		5 U					
Chloride	mg/L	**15000**		**403**	**2170**	**2400**	**2800**	**1500**	**2000**	**2600**	**3800**	**4000**	**200**	**5900**	**1500**	**52**	**25**
Chromium	mg/L		**0.0349**		**0.00944**	**0.037 J**	0.002 U						**0.22**			**0.016**	
Cobalt	mg/L		**0.000731**		**0.00238**	**0.00076 J**	**0.0013**						**0.01**			**0.0033**	
Conductivity, Field	uS/cm	**37634**	**7110**		**7954**				**7311**	**8200**		**11760**	**10750**		**6569**	**4938**	
Copper	mg/L						**0.003**						**0.055**			**0.012**	
Dissolved Oxygen, Field	mg/L		**7.22**		**3.52**												
Dissolved Solids, Total	mg/L	**26000**		**3060**	**4400**	**5200**	**4900 J**	**3200**	**4400**	**4400**	**4900**	**5500**	**6600**	**7500**	**3100**	**2200**	**860**
Fluoride	mg/L	**0.33 J**		**2.21**	**2.01**	**2.4**	**2.2 J**	**3.3**	**3.3**	**3.3**	**1.8**	**1.6**	**0.4 J**	**1.3**	**1.9**	**0.87**	**0.8**
Iron	mg/L						0.1 U						**58**			**7.7**	
Lead	mg/L		**0.00261**		**0.00424**	**0.0054 J**	0.001 U						**0.0092**			**0.0033**	
Lithium	mg/L		**0.593**		**0.086**	**0.08**	**0.074**						**0.075**			**0.023**	
Magnesium	mg/L	**220**			**9.05**		**11**	**2.3**	**0.3 J**	**0.21 J**	**16**	**18**	**19**	**33**	**8.7**	**11**	
Manganese	mg/L					**0.031 B**	**0.039**						**0.39**			**0.26**	
Mercury	mg/L		**8E-06**		**8E-06**	0.0002 U	0.0002 U										
Molybdenum	mg/L		**0.223**		**0.248**	**0.14 J**	**0.14**						**0.16**			**0.036**	
Nickel	mg/L						**0.038**						**0.037**			**0.017**	
pH, Field	pH units	**7.46**	**12.23**		**8.5**	**8.95**	**8.35**	**12.14**	**12.09**	**11.65**	**6.93**	**7.97**	**7.96**	**7.29**	**8.18**	**8.15**	**6.65**
Potassium	mg/L	**29**			**32.5**	**21 JB**	**15**	**3.5**	**2**	**2.6**	**8.1**	**5.6**	**7.6**	**6.7**	**3.5**	**5.1**	
Radium-226	pCi/L		**1.44**		**1.07**	**0.934**	**1**										
Radium-226/228	pCi/L		**2.62**		**2.041**	**1.81**	**1.56**										
Radium-228	pCi/L		**1.18**		**0.971**	**0.872**	**0.564**										
Redox Potential, Field	mV		**-93.7**		**40.3**												
Selenium	mg/L		**0.0054**		**0.0007**	**0.003 J**	0.005 U						0.005 U			0.005 U	
Silver	mg/L						**0.0001 J**						**0.00046 J**			**0.00033 J**	
Sodium	mg/L	**8100**			**911**	**1800 JB**	**1800**	**1100**	**1300**	**1600**	**2200**	**2400**	**2200**	**2800**	**1300**	**870**	
Strontium	mg/L				**1.72**	**2.1 JB**	**2.7**						**4.9**			**1.9**	
Sulfate	mg/L	**350**		**529**	**497**	**560**	**750**	**37**	**39**	5 U	**87**	**65**	**93**	**150**	**250**	**230**	**490**
Temperature, Field	deg C	**15**	**16.2**		**12.1**				**14**	**16**		**17**	**14**		**18**	**15**	
Thallium	mg/L		**0.000266**		**0.000105**	0.001 U	0.001 U						0.001 U			0.001 U	
Turbidity, Field	NTU	**1.4**	**7.1**		**67.4**	**22.4**	**73.2**	**42**	**20.4**	**16.8**		**305**	**358**		**35.1**	**159**	
Vanadium	mg/L																
Zinc	mg/L						**0.015 J**						**0.25**			**0.032**	

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Gavin Power Plant

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Location ID		2018-04	2018-04	2019-02	2019-06	93100	93100	93100	93100	93100	93100	93100	93100	93100	93100	93100	93100
Date		2020-04-08	2020-11-16	2020-09-15	2020-09-15	2016-08-23	2016-10-05	2016-12-02	2017-02-02	2017-03-29	2017-04-28	2017-06-12	2017-07-18	2017-07-18	2018-03-15	2018-09-24	2019-03-11
Sample Type		N	N	N	N	N	N	N	N	N	N	N	FD	N	N	N	FD
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L			**1800**	**220**			**393**	**359**						**360**	**320**	**320**
Aluminum	mg/L		**58**							**1.8 J**	**0.044 J**	**3.8 B**	**1.8**	**1.7**			
Antimony	mg/L		**0.0021**			**4E-05 J**	**6E-05 J**	**5E-05 J**	**5E-05 J**	**0.0012 J**	0.002 U	0.002 U	0.002 U	0.002 U			
Arsenic	mg/L		**0.079**			**0.00164**	**0.00207**	**0.00174**	**0.00156**	**0.002 J**	**0.0016 J**	**0.002 J**	**0.0019 J**	**0.002 J**			
Barium	mg/L		**0.62**			**0.602**	**0.69**	**0.468**	**0.521**	**0.64 B**	**0.65**	**0.65**	**0.66**	**0.66**			
Beryllium	mg/L		**0.0032**			**1E-05 J**	**5.3E-05**	**1E-05 J**	**1E-05 J**	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U			
Bicarbonate Alkalinity as CaCO3	mg/L			5 U	**220**										**360**	**320**	
Bicarbonate Alkalinity as HCO3	mg/L																**320**
Boron	mg/L	**0.24**	**0.21**	0.1 U	**0.23**	**0.432**	**0.429**	**0.39**	**0.415**	**0.45**	**0.47 B**	**0.48**	**0.49 JB**	**0.5 JB**	**0.45**	**0.45**	**0.48**
Bromide	mg/L		**0.3 J**					**7.81**	**8.8**	**8.9 J**	**8.9 J**	**10**	**8.7 J**	**8.8 J**			
Cadmium	mg/L		**0.00034 J**			4E-05 U	**1E-05 J**	4E-05 U	4E-05 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U			
Calcium	mg/L	**62**	**74**	**220**	**27**	**20.3**	**22.2**	**14.1**	**16.8**	**17 B**	**16**	**20**	**17**	**17**	**14**	**18**	**17**
Carbonate Alkalinity as CaCO3	mg/L			**120**	**5.6**										5 U	5 U	5 U
Chloride	mg/L	**26**	**28**	**190**	**1900**	**2180**	**2310**	**1770**	**199**	**2200**	**2200**	**2100**	**2200**	**2200**	**1800**	**2200**	**2100**
Chromium	mg/L		**0.24**			**0.0022**	**0.0049**	**0.00586**	**0.00582**	**0.0098**	0.002 U	**0.04**	**0.011**	**0.011**			
Cobalt	mg/L		**0.088**			**0.00062**	**0.00129**	**0.00235**	**0.00195**	**0.0012**	**0.00027 J**	**0.0099**	**0.0033**	**0.0031**			
Conductivity, Field	uS/cm	**1675**	**1977**	**8754**	**7203**	**6544**	**7642**	**5904**	**7014**						**6107**		
Copper	mg/L		**0.11**							**0.0028 B**	0.002 U	**0.0051 B**	0.002 U	0.002 U			
Dissolved Oxygen, Field	mg/L					**1.22**	**0.51**	**0.91**	**1.18**						**0.2**		
Dissolved Solids, Total	mg/L	**980**	**1100**	**1900**	**2900**	**3630**	**3980**	**3420**	**3600**	**3900 J**	**3700 J**	**3600**	**3400 J**	**3600 J**	**3300**	**3100**	**3100**
Fluoride	mg/L	**0.67**	0.5 U	**0.86**	**1.5**	**2.17**	**2.05**	**1.97**	**2.18**	**2.4**	**2.2**	**2.3**	**2.3**	**2.3**	**2.6**	**2.7**	**2.2**
Iron	mg/L		**120**							**1.7 JB**	**0.082 J**	**1**	**0.42**	**0.41**			
Lead	mg/L		**0.06**			**0.000244**	**0.00093**	**0.000135**	**0.000189**	**0.001 J**	0.001 U	**0.00046 J**	0.001 U	0.001 U			
Lithium	mg/L		**0.074**			**0.048**	**0.058**	**0.046**	**0.04**	**0.044**	**0.047**	**0.043**	**0.048**	**0.048**			
Magnesium	mg/L	**15**	**32**	1 U	**7.7**			**4.4**	**5.37**	**6.2 B**	**5.6**	**6.1**	**6.2**	**6.2**	**4.1**	**5.4**	**5.9**
Manganese	mg/L		**1.7**							**0.046**	**0.032**	**0.055**	**0.045**	**0.044**			
Mercury	mg/L					5E-06 U	**3E-06 J**	5E-06 U	5E-06 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U			
Molybdenum	mg/L		**0.14**			**0.087**	**0.0889**	**0.125**	**0.106**	**0.11**	**0.11**	**0.11 J**	**0.097**	**0.098**			
Nickel	mg/L		**0.13**							**0.0065**	0.002 U	**0.038**	**0.0096**	**0.0087**			
pH, Field	pH units	**7.2**	**7.68**	**12.62**	**8.46**	**7.97**	**7.85**	**7.78**	**7.87**	**7.82**	**7.86**	**7.77**		**7.71**	**7.93**	**7.89**	
Potassium	mg/L	**3.7**	**12**	**33**	**3.8**			**3.87**	**4.57**	**3.1 B**	**2.6**	**2.7**	**2.7**	**2.7**	**2.1**	**2.6**	**2.6**
Radium-226	pCi/L					**0.637**	**0.909**	**0.863**	**0.544**	**0.538**	**0.565**	**0.736**	**0.691 J**	**0.758 J**			
Radium-226/228	pCi/L					**2.587**	**1.969**	**1.538**	**1.252**	**0.869**	**1.14**	**1.19**	**1.32**	**1.41**			
Radium-228	pCi/L					**1.95**	**1.06**	**0.675**	**0.708**	**0.332 U**	**0.58**	**0.458**	**0.63**	**0.648**			
Redox Potential, Field	mV					**-98.5**	**788**	**35.3**	**-138.6**								
Selenium	mg/L		**0.0043 J**			**0.0001 J**	**0.0002 J**	**0.0003**	**0.0002 J**	**0.0007 J**	0.005 U	0.005 U	0.005 U	0.005 U			
Silver	mg/L		**0.0007 J**							0.001 U	0.001 U	**0.00036 J**	**6.9E-05 J**	**6.3E-05 J**			
Sodium	mg/L	**370**	**300**	**560**	**1500**			**1270**	**1050**	**1400 JB**	**1500**	**1500**	**1500 JB**	**1500 JB**	**1200**	**1400**	**1500**
Strontium	mg/L		**0.96**					**1.18**	**1.4**	**1.7 B**	**1.9**	**1.7 B**	**1.7**	**1.7**			
Sulfate	mg/L	**470**	**460**	**3.1 J**	**750**	**11.4**	**8.4**	**12.2**	**9.9**	**15 J**	**13 J**	**15**	**14 J**	**14 J**	**22**	**16**	**17 J**
Temperature, Field	deg C	**18**	**16**	**13**	**14**	**19.02**	**18.6**	**14.9**	**14.1**						**15.2**		
Thallium	mg/L		**0.0006 J**			0.0001 U	**3E-05 J**	**2E-05 J**	**4E-05 J**	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U			
Turbidity, Field	NTU	**46**	**854**	**19.8**	**13.4**	**7**	**42.7**	**7.4**	**15.3**	**31.1**	**6.4**	**2.8**		**6**	**4.6**	**1.18**	
Vanadium	mg/L												0.005 U	0.005 U			
Zinc	mg/L		**0.4**							0.02 U	0.02 U	0.02 U	0.02 U	0.02 U			

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NTU = Nephelometric Turbidity Unit
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Appendix A
Analytical Data Summary
Residual Waste Landfill and Fly Ash Reservoir
Gavin Power Plant

Program		FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL
Location ID		93100	93100	93100	93100	93100	93108	93108	93108	93108	93108	93108	93108	93108	93108	93108	94136
Date		2019-03-11	2019-09-23	2020-03-19	2020-03-19	2020-09-22	2016-08-24	2016-10-06	2016-12-02	2017-02-02	2017-03-23	2017-05-02	2017-06-12	2017-07-18	2018-03-15	2018-09-14	2016-08-24
Sample Type		N	N	FD	N	N	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L	**320**	**330**	**330**	**330**	**320**			**720**	**672**					**640**	**640**	
Aluminum	mg/L										**2.5 J**	**0.13**	**0.041 JB**	**7.1**			
Antimony	mg/L						**0.0001**	**3E-05 J**	**0.00023**	**0.00016**	0.002 U	0.002 U	0.002 U	0.002 U			**2E-05 J**
Arsenic	mg/L						**0.00196**	**0.00153**	**0.0025**	**0.00166**	**0.0018 J**	**0.0013 J**	**0.0016 J**	**0.0029 J**			**0.00037**
Barium	mg/L						**0.174**	**0.164**	**0.199**	**0.157**	**0.19 B**	**0.18**	**0.18**	**0.22**			**0.0865**
Beryllium	mg/L						**4.1E-05**	**1E-05 J**	**0.000162**	**0.000107**	0.001 U	0.001 U	0.001 U	**0.00047 J**			2E-05 U
Bicarbonate Alkalinity as CaCO3	mg/L		**330**	**330**	**330**	**320**									**640**	**640**	
Bicarbonate Alkalinity as HCO3	mg/L	**320**															
Boron	mg/L	**0.49**	**0.46**	**0.47**	**0.47**	**0.48**	**0.429**	**0.404**	**0.391**	**0.411**	**0.5**	**0.48**	**0.46**	**0.48 JB**	**0.45**	**0.47**	**0.405**
Bromide	mg/L								**2.42**	**2.16**	**2.4 J**	**2.7 J**	**2.8**	**2.6 J**			
Cadmium	mg/L						**7E-05**	**3E-05**	**0.0003**	**0.00019**	0.001 U	0.001 U	**0.0014**	**0.00024 J**			**6E-06 J**
Calcium	mg/L	**17**	**18**	**17**	**18**	**19**	**6.09**	**5.87**	**6.55**	**5.85**	**6 B**	**5.9**	**5.8**	**6.4**	**5.6**	**6.4**	**23.2**
Carbonate Alkalinity as CaCO3	mg/L	5 U	5 U	**4.6 J**	5 U	5 U									5 U	5 U	
Chloride	mg/L	**2100**	**2000**	**2200**	**2200**	**2200**	**745**	**731**	**681**	**688**	**700**	**820**	**790**	**750**	**770**	**720**	**888**
Chromium	mg/L						**0.0086**	**0.0062**	**0.0263**	**0.025**	**0.02**	**0.004**	0.002 U	**0.067**			**0.0012**
Cobalt	mg/L						**0.00113**	**0.00039**	**0.00393**	**0.00262**	**0.002**	**0.00037 J**	**0.00025 J**	**0.0059**			**0.000107**
Conductivity, Field	uS/cm			**6772**	**6772**	**6702**	**3490**	**3589**	**3580**	**3545**					**3606**		**3541**
Copper	mg/L										**0.008 B**	0.002 U	0.002 U	**0.021**			
Dissolved Oxygen, Field	mg/L						**1.67**	**0.81**	**1.01**	**1.42**					**0.64**		**1.08**
Dissolved Solids, Total	mg/L	**3100**	**2900**	**3200**	**3900**	**3100**	**1940**	**1900**	**1950**	**1900**	**1800 J**	**1900 J**	**2000**	**1800 J**	**2100**	**1700**	**1850**
Fluoride	mg/L	**2.2**	**2.7**	**2.6**	**2.6**	**2.3**	**4.59**	**4.46**	**4.15**	**4.57**	**5.4**	**5.1**	**5.3**	**5.5**	**4.6**	**4.9**	**0.96**
Iron	mg/L										**2.7 JB**	**0.25**	**0.12**	**8.3**			
Lead	mg/L						**0.00206**	**0.000516**	**0.00639**	**0.00385**	**0.0026 J**	**0.0007 J**	0.001 U	**0.0074**			**5.3E-05**
Lithium	mg/L						**0.027**	**0.028**	**0.033**	**0.024**	**0.025**	**0.025**	**0.029**	**0.033**			**0.028**
Magnesium	mg/L	**6.1**	**6.3**	**5.3**	**5.6**	**5.8**			**2.33**	**2.18**	**2.2 B**	**2**	**1.8**	**2.9**	**1.7**	**1.9 J**	
Manganese	mg/L										**0.051**	**0.027**	**0.031**	**0.092**			
Mercury	mg/L						**5E-06**	**1.5E-05**	**1E-05**	**9E-06**	0.0002 U	0.0002 U	0.0002 U	0.0002 U			5E-06 U
Molybdenum	mg/L						**0.254**	**0.267**	**0.237**	**0.23**	**0.25**	**0.24**	**0.23 J**	**0.24**			**0.0135**
Nickel	mg/L										**0.014**	**0.0033**	**0.0015 J**	**0.05**			
pH, Field	pH units	**8.06**	**8.04**	**8.02**	**8.02**	**7.94**	**7.59**	**7.87**	**7.96**	**7.9**	**8.07**	**7.99**	**7.87**	**7.84**	**7.97**	**7.7**	**7.54**
Potassium	mg/L	**2.6**	**2.9**	**2.5**	**2.5**	**2.6**			**2.59**	**2.53**	**1.8 B**	**1.4**	**1.3**	**2.7**	**1.3**	**1.4 J**	
Radium-226	pCi/L						**0.74**	**0.639**	**1.02**	**0.322**	**0.355**	**0.289**	**0.351**	**0.527**			**0.312**
Radium-226/228	pCi/L						**2.68**	**2.059**	**1.229**	**0.502**	**0.471**	**0.919**	**0.704**	**2.09**			**2.592**
Radium-228	pCi/L						**1.94**	**1.42**	**0.209**	**0.18**	**0.116 U**	**0.63**	**0.353**	**1.56**			**2.28**
Redox Potential, Field	mV						**-29.9**	**-145.3**	**-112.7**	**-121.3**							**170.7**
Selenium	mg/L						**0.0002 J**	**6E-05 J**	**0.0004**	**0.0002**	0.005 U	0.005 U	0.005 U	0.005 U			**4E-05 J**
Silver	mg/L										0.001 U	0.001 U	0.001 U	**6.2E-05 J**			
Sodium	mg/L	**1500**	**1400**	**1400**	**1400**	**1400**			**827**	**595**	**790 JB**	**790 B**	**790**	**760 JB**	**810**	**820**	
Strontium	mg/L								**0.434**	**0.41**	**0.46 B**	**0.5 B**	**0.45 B**	**0.46**			
Sulfate	mg/L	**18 J**	**16**	**17**	**17**	**13**	**73.1**	**66.1**	**68.1**	**72.3**	**83 J**	**82**	**84**	**90**	**85**	**85**	**91.6**
Temperature, Field	deg C			**16**	**16**	**17**	**18.33**	**15**	**12.9**	**12.9**					**14.8**		**17.44**
Thallium	mg/L						**0.000125**	**4E-05 J**	**0.000159**	**0.000126**	0.001 U	0.001 U	0.001 U	**0.00021 J**			**1E-05 J**
Turbidity, Field	NTU		**7**	**4**	**4**	**1.4**	**28.9**	**9.7**	**18.3**	**15.9**	**50.1**	**16.4**	**8.6**	**287.1**	**4.8**	**10.1**	**4**
Vanadium	mg/L										**0.0045 J**			**0.013**			
Zinc	mg/L										**0.019 J**	0.02 U	0.02 U	**0.036**			

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Gavin Power Plant

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Location ID		94136	94136	94136	94136	94136	94136	94136	94136	94136	94136	94136	94136	94136	94136	94136	94136
Date		2016-10-06	2016-12-01	2017-02-01	2017-03-23	2017-04-28	2017-06-09	2017-07-17	2017-07-17	2018-03-08	2018-03-08	2018-09-12	2019-03-07	2019-09-17	2019-09-17	2020-03-25	2020-09-25
Sample Type		N	N	N	N	N	N	FD	N	FD	N	N	N	FD	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L		**331**	**323**								**310**	**310**	**330**	**340**	**370**	**340**
Aluminum	mg/L				**0.057**	**0.037 J**	**0.69**	0.05 U	0.05 U								
Antimony	mg/L	**3E-05 J**	**2E-05**	**1E-05 J**	**0.0017 J**	0.002 U	0.01 U	0.002 U	0.002 U								
Arsenic	mg/L	**0.00048**	**0.00042**	**0.00039**	**0.0012 J**	0.005 U	0.025 U	0.005 U	0.005 U								
Barium	mg/L	**0.0894**	**0.102**	**0.0877**	**0.11 B**	**0.1**	**0.099 B**	**0.11**	**0.1**								
Beryllium	mg/L	**1E-05 J**	**1E-05**	**5E-06 J**	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U								
Bicarbonate Alkalinity as CaCO3	mg/L											**310**		**330**	**330**	**360**	**340**
Bicarbonate Alkalinity as HCO3	mg/L												**310**				
Boron	mg/L	**0.395**	**0.349**	**0.362**	**0.46**	**0.43 B**	**0.54**	**0.42 JB**	**0.44 JB**	**0.49**	**0.54**		**0.33**	**0.41**	**0.44**	**0.48**	**0.41**
Bromide	mg/L		**4.07**	**3.25**	**3.7 J**	**3.7 J**	**3.8 J**	**4.2 J**	**4.2 J**								
Cadmium	mg/L	**6E-06 J**	**6E-06**	**5E-06 J**	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U								
Calcium	mg/L	**22**	**19.2**	**17.7**	**19 B**	**17**	**16**	**17**	**17**	**29**	**34**	**17**	**15**	**14**	**14**	**13**	**14**
Carbonate Alkalinity as CaCO3	mg/L											5 U	5 U	**5.9**	**6**	**6.1**	**5.1**
Chloride	mg/L	**927**	**887**	**882**	**910**	**900**	**940**	**950**	**960**	**940**	**950**	**970**	**900**	**870**	**870**	**960**	**830**
Chromium	mg/L	**0.002**	**0.0013**	**0.00124**	**0.0019 J**	0.002 U	**0.005 J**	**0.0032**	**0.001 J**								
Cobalt	mg/L	**0.00029**	**0.00015**	**0.000122**	**0.0004 J**	**0.00079 J**	**0.0014 J**	**0.0007 J**	**0.00065 J**								
Conductivity, Field	uS/cm	**3581**	**3578**	**3558**							**3896**					**3409**	**3397**
Copper	mg/L				**0.00085 JB**	0.002 U	0.01 U	0.002 U	0.002 U								
Dissolved Oxygen, Field	mg/L	**0.58**	**0.77**	**1.7**							**4.05**						
Dissolved Solids, Total	mg/L	**1820**	**1840**	**1750**	**1800 J**	**2000 J**	**2000**	**1800 J**	**1900 J**	**1900**	**1900**		**1700**	**2000**	**1900**	**1700**	**1400**
Fluoride	mg/L	**0.94**	**1.03**	**0.9**	**1.2**	**1.2**	**1.4**	**1.1**	**1.1**	**1.1**	**1.1**	**1.2**	**1.1**	**1.3**	**1.4**	**1.4**	**1.4**
Iron	mg/L				**0.067 JB**	0.1 U	**0.6**	0.1 U	0.1 U								
Lead	mg/L	**0.000164**	**0.000142**	**7.9E-05**	**0.00031 J**	0.001 U	0.001 U	0.001 U	0.001 U								
Lithium	mg/L	**0.033**	**0.035**	**0.029**	**0.026**	**0.028**	**0.025**	**0.03**	**0.029**								
Magnesium	mg/L		**4.46**	**4.13**	**4.5 B**	**3.9**	**4.1 J**	**4.3**	**4.3**	**6.5**	**7.4**	**3.9**	**3.8**	**3.5**	**3.5**	**3.5**	**3.6**
Manganese	mg/L				**0.058**	**0.03**	**0.079**	**0.098**	**0.089**								
Mercury	mg/L	5E-06 U	**2E-06**	5E-06 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U								
Molybdenum	mg/L	**0.015**	**0.0137**	**0.0133**	**0.02**	**0.015**	**0.017 J**	**0.015**	**0.015**								
Nickel	mg/L				**0.0015 J**	**0.004**	0.01 U	0.002 U	0.002 U								
pH, Field	pH units	**7.69**	**7.72**	**7.74**	**7.81**	**7.76**	**7.8**		**7.89**		**7.74**	**7.87**	**8**		**8.02**	**8.06**	**8.07**
Potassium	mg/L		**2.38**	**4.27**	**2.1 B**	**2**	**2.1 J**	**2**	**2**	**2.4**	**2.6**	**2.1**	**1.8**	**1.9**	**1.9**	**1.9**	**1.9**
Radium-226	pCi/L	**0.984**	**0.122**	**0.304**	**0.211**	**0.338**	**0.191**	**0.123**	**0.22**								
Radium-226/228	pCi/L	**2.264**	**1.642**	**0.665**	**0.398**	**0.584**	**0.528**	**0.521**	**0.765**								
Radium-228	pCi/L	**1.28**	**1.52**	**0.361**	**0.188 U**	**0.246 U**	**0.337 U**	**0.398**	**0.545**								
Redox Potential, Field	mV	**11.5**	**-50.1**	**26.4**													
Selenium	mg/L	**8E-05 J**	**7E-05**	**5E-05 J**	**0.0012 J**	0.005 U	0.025 U	0.005 U	0.005 U								
Silver	mg/L				0.001 U	0.001 U	0.005 U	0.001 U	0.001 U								
Sodium	mg/L		**557**	**496**	**750 JB**	**690**	**750**	**720 JB**	**720 JB**	**790**	**800**	**760**	**710**	**750**	**760**	**690**	**690**
Strontium	mg/L		**0.686**	**0.616**	**0.74 B**	**0.69**	**0.65 B**	**0.73**	**0.73**								
Sulfate	mg/L	**75.1**	**63.8**	**52.7**	**78 J**	**83**	**99**	**60**	**61**	**150**	**180**	**75**	**60**	**81**	**85**	**73**	**67**
Temperature, Field	deg C	**15.8**	**15.3**	**14**							**14.7**					**15**	**16**
Thallium	mg/L	**9.9E-05**	1E-05	5E-05 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U								
Turbidity, Field	NTU	**8.4**	**9.2**	**21.1**	**6.4**	**195.4**	**8.5**		**5.9**		**1.1**	**2.94**			**12**	**7**	**2.9**
Vanadium	mg/L				**0.00054 J**			0.005 U	0.005 U								
Zinc	mg/L				0.02 U	0.02 U	0.1 U	0.02 U	0.02 U								

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Location ID		94137	94137	94137	94137	94137	94137	94137	94137	94137	94137	94137	94137	94137	94137	94139	94139
Date		2016-08-24	2016-10-06	2016-12-01	2017-02-01	2017-03-23	2017-04-28	2017-06-09	2017-07-17	2018-03-08	2018-09-12	2019-03-11	2019-09-17	2020-03-25	2020-09-25	2016-08-23	2016-10-05
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L			**341**	**360**						**330**	**330**	**340**	**350**	**330**		
Aluminum	mg/L					**0.039 J**	0.05 U	**0.27**	0.05 U								
Antimony	mg/L	**5E-05**	**3E-05 J**	**3E-05**	**4E-05 J**	**0.00038 J**	0.002 U	0.002 U	0.002 U							**4E-05 J**	**3E-05 J**
Arsenic	mg/L	**0.00179**	**0.00244**	**0.00211**	**0.00138**	**0.0026 J**	**0.0012 J**	**0.0036 J**	**0.0028 J**							**0.00328**	**0.00322**
Barium	mg/L	**0.0524**	**0.0578**	**0.0553**	**0.049**	**0.068 B**	**0.056**	**0.065 B**	**0.059**							**0.0893**	**0.0852**
Beryllium	mg/L	2E-05 U	2E-05 U	5E-06	2E-05 U	0.001 U	0.001 U	0.001 U	0.001 U							**6.5E-05**	**2.7E-05**
Bicarbonate Alkalinity as CaCO3	mg/L										**330**		**340**	**350**	**330**		
Bicarbonate Alkalinity as HCO3	mg/L											**330**					
Boron	mg/L	**0.021**	**0.017**	**0.022**	**0.037**	**0.04 J**	**0.028 JB**	**0.039 J**	**0.072 JB**	**0.035 J^**		**0.037 J**	0.1 U	0.1 U	**0.024 J**	**0.498**	**0.507**
Bromide	mg/L			**0.106**	**0.085**	**0.11 J**	2.5 U	**0.11 J**	**0.09 J**								
Cadmium	mg/L	**6E-05**	**2E-05**	**7E-05**	**5E-05**	0.001 U	0.001 U	0.001 U	0.001 U							**1E-05 J**	**1E-05 J**
Calcium	mg/L	**147**	**163**	**154**	**148**	**160 B**	**160**	**160**	**160**	**150**	**160**	**150**	**150**	**150**	**150**	**6.7**	**5.6**
Carbonate Alkalinity as CaCO3	mg/L										5 U	5 U	5 U	5 U	5 U		
Chloride	mg/L	**27.5**	**27.7**	**27.8**	**27.5**	**29**	**29**	**29**	**28**	**28**	**28**	**28**	**26**	**27**	**28**	**487**	**503**
Chromium	mg/L	**0.0035**	**0.0055**	**0.0014**	**0.00169**	**0.0031**	0.002 U	**0.0049**	**0.0038**							**0.0008**	**0.0017**
Cobalt	mg/L	**0.0922**	**0.495**	**0.0503**	**0.056**	**0.12**	**0.031**	**0.097**	**0.17**							**0.000397**	**0.00031**
Conductivity, Field	uS/cm	**1252**	**1305**	**1283**	**1302**					**1281**				**1221**	**1213**	**2454**	**2630**
Copper	mg/L					**0.00065 JB**	0.002 U	**0.0045**	0.002 U								
Dissolved Oxygen, Field	mg/L	**1.08**	**0.73**	**0.83**	**1.29**					**1.61**						**1.05**	**0.41**
Dissolved Solids, Total	mg/L	**958**	**856**	**867**	**883**	**890 J**	**920 J**	**880**	**920 J**	**890**		**870**	**890**	**870**	**830**	**1420**	**1460**
Fluoride	mg/L	**0.11**	**0.1 J**	**0.12**	**0.11**	**0.14**	**0.12 J**	**0.13 J**	**0.12**	**0.12 J**	**0.11**	0.25 U	**0.11**	**0.12**	**0.12**	**4.22**	**4.08**
Iron	mg/L					**0.67 JB**	**0.19**	**1.6**	**0.83**								
Lead	mg/L	**0.0002**	**0.000152**	**0.000156**	**7E-05**	**0.00019 J**	0.001 U	**0.00053 J**	0.001 U							**0.000963**	**0.00125**
Lithium	mg/L	**0.011**	**0.017**	**0.015**	**0.007**	**0.0078 J**	**0.0096**	**0.0088**	**0.0088**							**0.02**	**0.026**
Magnesium	mg/L			**47.9**	**47.4**	**51 B**	**47**	**50**	**48**	**51**	**49**	**51**	**48**	**47**	**49**		
Manganese	mg/L					**0.088**	**0.06**	**0.13**	**0.14**								
Mercury	mg/L	**8E-06**	**3E-06 J**	**5E-06**	**2E-06 J**	0.0002 U	0.0002 U	0.0002 U	0.0002 U							5E-06 U	5E-06 U
Molybdenum	mg/L	**0.00275**	**0.00353**	**0.00287**	**0.00633**	**0.0034 J**	**0.0027 J**	**0.0031 J**	**0.0026 J**							**0.2**	**0.231**
Nickel	mg/L					**0.0028**	**0.0019 J**	**0.0039**	**0.003**								
pH, Field	pH units	**7.11**	**6.93**	**6.98**	**7.02**	**7.03**	**6.96**	**7.05**	**6.96**	**6.98**	**7.01**	**7.13**	**7.13**	**7.14**	**7.2**	**8.19**	**8.18**
Potassium	mg/L			**1.82**	**2.18**	**1.7 B**	**1.7**	**1.8**	**1.7**	**1.7**	**1.9**	**2**	**1.8**	**1.6**	**1.7**		
Radium-226	pCi/L	**0.171**	**1.71**	**0.29**	**0.257**	**0.239**	**0.111**	**0.0957**	**0.0922**							**1.34**	**0.464**
Radium-226/228	pCi/L	**2.681**	**2.373**	**1.268**	**3.127**	**0.261 U**	**0.201 U**	**0.331 U**	**0.3 U**							**16.81**	**1.634**
Radium-228	pCi/L	**2.51**	**0.663**	**0.978**	**2.87**	**0.0221 U**	**0.0903 U**	**0.235 U**	**0.208 U**							**15.47**	**1.17**
Redox Potential, Field	mV	**-32.2**	**-21.4**	**-55.4**	**-74.7**											**-51.8**	**-191.2**
Selenium	mg/L	**5E-05 J**	**9E-05 J**	**5E-05**	0.0001 U	**0.00056 J**	0.005 U	0.005 U	0.005 U							**0.0002**	**0.0001**
Silver	mg/L					**6E-05 J**	0.001 U	**6.8E-05 J**	0.001 U								
Sodium	mg/L			**70.7**	**65**	**68 JB**	**64 B**	**68**	**68 JB**	**67**	**64**	**67**	**65**	**61**	**64**		
Strontium	mg/L			**0.298**	**0.276**	**0.32 B**	**0.29**	**0.28 B**	**0.29**								
Sulfate	mg/L	**348**	**330**	**349**	**332**	**360 J**	**360**	**360**	**370**	**360**	**370**	**370**	**350**	**390**	**330**	**56.1**	**49**
Temperature, Field	deg C	**19.28**	**17**	**15.7**	**14**					**14.7**				**14**	**17**	**20.42**	**17.9**
Thallium	mg/L	**4E-05 J**	**4E-05 J**	**4E-05**	**0.000166**	0.001 U	0.001 U	0.001 U	0.001 U							5E-05 U	5E-05 U
Turbidity, Field	NTU	**5.9**	**9.7**	**7.8**	**7.1**	**8**	**13.9**	**4.5**	**6.7**	**2.3**	**4.31**		**3**	**2.5**	**1.3**	**69.7**	**8.8**
Vanadium	mg/L					**0.00076 J**			0.005 U								
Zinc	mg/L					0.02 U	0.02 U	0.02 U	0.02 U								

Notes:
FD = Field duplicate sample
N = Normal environmental sample
deg C = Degree Celcius
mg/L = Milligrams per liter
mV = Milivolts
NTU = Nephelometric Turbidity Unit
uS/cm = Microsiemens per centimeter
pCi/L = Picocuries per liter
B: Compound was found in the blank and sample.
J: Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.
U: Indicates the analyte was analyzed for but not detected.
Empty cells = Not analyzed

Appendix A
Analytical Data Summary
Residual Waste Landfill and Fly Ash Reservoir
Gavin Power Plant

Program		FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL
Location ID		94139	94139	94139	94139	94139	94139	94139	94139	94139	94139	94139	94139	94139	96152	96152	96152
Date		2016-12-02	2017-02-02	2017-03-29	2017-04-28	2017-06-12	2017-06-12	2017-07-18	2018-03-15	2018-09-24	2019-03-11	2019-09-23	2020-03-19	2020-09-22	2019-03-28	2019-09-22	2020-03-26
Sample Type		N	N	N	N	FD	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L	**563**	**555**						**510**	**500**	**500**	**490**	**520**	**500**	**450**	**450**	**470**
Aluminum	mg/L			**1.1 J**	**0.092**	**3.8 B**	**5.1 B**	**32**									
Antimony	mg/L	**6E-05**	**3E-05 J**	**0.0017 J**	0.002 U	0.002 U	0.002 U	0.002 U									
Arsenic	mg/L	**0.00438**	**0.00317**	**0.0031 J**	**0.0033 J**	**0.0047 J**	**0.0051**	**0.008**									
Barium	mg/L	**0.0969**	**0.081**	**0.097 B**	**0.092**	**0.11**	**0.12**	**0.29**									
Beryllium	mg/L	**7.1E-05**	**2E-05 J**	0.001 U	0.001 U	0.001 U	**0.00038 J**	**0.0015**									
Bicarbonate Alkalinity as CaCO3	mg/L								**490**	**490**		**470**	**490**	**470**	**450**	**450**	**470**
Bicarbonate Alkalinity as HCO3	mg/L										**480**						
Boron	mg/L	**0.458**	**0.456**	**0.52**	**0.54 B**	**0.53**	**0.54**	**0.54 JB**	**0.51**	**0.5**	**0.54**	**0.51**	**0.51**	**0.51**	**0.43**	**0.41**	**0.43**
Bromide	mg/L	**1.75**	**1.57**	**1.9 J**	**1.8 J**	**1.8 J**	**1.8 J**	**1.8 J**									
Cadmium	mg/L	2E-05 U	**6E-06 J**	0.001 U	0.001 U	0.001 U	0.001 U	**0.00034 J**									
Calcium	mg/L	**7.99**	**6.66**	**5.5 B**	**7.1**	**9.6**	**10**	**13**	**7.1**	**6.8**	**6.7**	**7.5**	**7.4**	**8.1**	**85**	**61**	**64**
Carbonate Alkalinity as CaCO3	mg/L								**15**	**13**	**17**	**19**	**27**	**24**	5 U	5 U	5 U
Chloride	mg/L	**450**	**500**	**510**	**510**	**480**	**480**	**520**	**500**	**560**	**500**	**480**	**560**	**560**	**4900**	**4300**	**4800**
Chromium	mg/L	**0.00236**	**0.000647**	**0.0017 J**	0.002 U	**0.0029**	**0.0052**	**0.014**									
Cobalt	mg/L	**0.000507**	**0.000159**	**0.00037 J**	0.001 U	**0.00062 J**	**0.00082 J**	**0.0035**									
Conductivity, Field	uS/cm	**2608**	**2726**						**2550**				**2467**	**2493**			**12690**
Copper	mg/L			**0.0014 JB**	0.002 U	**0.007 B**	**0.0063 B**	**0.019**									
Dissolved Oxygen, Field	mg/L	**0.79**	**1.27**						**1.29**								
Dissolved Solids, Total	mg/L	**1390**	**1360**	**1500 J**	**1500 J**	**1400**	**1400**	**1400 J**	**1400**	**1400**	**1300**	**1300**	**1300**	**1400**	**6400**	**6200**	**6600**
Fluoride	mg/L	**4.05**	**4.11**	**4.6**	**4.7**	**5**	**5**	**5.1**	**4.4**	**4.6**	**4.4**	**4.7**	**4.6**	**4.6**	**0.84**	**0.91**	**0.86**
Iron	mg/L			**0.62 JB**	**0.048 J**	**1.7**	**2.4**	**16**									
Lead	mg/L	**0.000921**	**0.000319**	**0.001 J**	0.001 U	**0.0025**	**0.004**	**0.029**									
Lithium	mg/L	**0.026**	**0.014**	**0.019**	**0.019**	**0.018**	**0.019**	**0.024**									
Magnesium	mg/L	**2.44**	**2**	**1.9 B**	**2.1**	**3.2**	**3.4**	**7.5**	**2.3**	**2.1**	**2.3**	**2.9**	**2.3**	**2.9**	**28**	**24**	**23**
Manganese	mg/L			**0.026**	**0.017**	**0.023**	**0.033**	**0.28**									
Mercury	mg/L	**1E-05**	**3E-06 J**	0.0002 U	0.0002 U	0.0002 U	0.0002 UJ	0.0002 U									
Molybdenum	mg/L	**0.214**	**0.195**	**0.22**	**0.21**	**0.19 J**	**0.2 J**	**0.19**									
Nickel	mg/L			**0.00089 J**	0.002 U	**0.0025**	**0.0027**	**0.013**									
pH, Field	pH units	**8.17**	**8.13**	**8.12**	**8.14**		**8.01**	**7.92**	**8.19**	**8.17**	**8.37**	**8.36**	**8.35**	**8.22**	**7.71**	**7.55**	**7.75**
Potassium	mg/L	**2.6**	**1.97**	**1.4 B**	**1.4**	**1.5**	**1.6**	**2.4**	**1.4**	**1.4**	**1.4**	**1.6**	**1.3**	**1.5**	**14**	**11**	**11**
Radium-226	pCi/L	**0.936**	**0.454**	**0.387**	**0.547**	**0.559**	**0.61**	**0.886 J**									
Radium-226/228	pCi/L	**1.606**	**1.196**	**0.797**	**0.907**	**1.12**	**0.971**	**2.21**									
Radium-228	pCi/L	**0.67**	**0.742**	**0.41 U**	**0.36 U**	**0.565**	**0.361 U**	**1.32**									
Redox Potential, Field	mV	**-43.3**	**-102.6**														
Selenium	mg/L	**0.0002**	**3E-05 J**	**0.00089 J**	0.005 U	0.005 U	**0.00091 J**	**0.0029 J**									
Silver	mg/L			0.001 U	0.001 U	0.001 U	0.001 U	**0.00019 J**									
Sodium	mg/L	**425**	**451**	**580 JB**	**570**	**530**	**550**	**560 JB**	**550**	**590**	**560**	**510**	**550**	**520**	**2800**	**2500**	**2500**
Strontium	mg/L	**0.453**	**0.395**	**0.4 B**	**0.46**	**0.48 B**	**0.51 B**	**0.75**									
Sulfate	mg/L	**52.8**	**51**	**62 J**	**62**	**70**	**69**	**66**	**65**	**74**	**66**	**60**	**62**	**59**	**19**	**16**	**20**
Temperature, Field	deg C	**14.8**	**14.3**						**15.7**				**16**	**17**			**15**
Thallium	mg/L	**2E-05 J**	**2E-05 J**	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U									
Turbidity, Field	NTU	**169.8**	**8.7**	**5**	**5.9**		**90.8**	**69.3**	**22**	**10.8**		**34**	**7.4**	**309**		**252**	**230**
Vanadium	mg/L							**0.0079**									
Zinc	mg/L			0.02 U	0.02 U	0.02 U	0.02 U	**0.081**									

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mV = Milivolts
NTU = Nephelometric Turbidity Unit
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Gavin Power Plant

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Location ID		96152	96153R	96153R	96153R	96153R	96153R	96153R	96153R	96153R	96153R	96153R	96153R	96153R	96153R	96153R	96154R
Date		2020-09-17	2016-08-23	2016-10-03	2016-11-29	2017-03-21	2017-04-25	2017-06-06	2017-07-12	2018-03-22	2018-09-13	2019-03-29	2019-09-19	2020-03-15	2020-03-24	2020-09-15	2016-08-23
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L	**550**			**262**	**84**					**71**	**140**	5 U	**280**	**270**	**230**	
Aluminum	mg/L						**0.56**	**0.47**	**0.085 B**								
Antimony	mg/L		**0.00059**	**0.00036**	**0.00024**	**0.00085 J**	0.002 U	**0.00057 J**	0.002 U		0.002 U						**0.00091**
Arsenic	mg/L		**0.00237**	**0.00142**	**0.0013**	**0.0044 J**	0.005 U	0.005 U	0.005 U		0.005 U						**0.00644**
Barium	mg/L		**0.0315**	**0.0901**	**0.136**	**0.061 JB**	**0.027**	**0.037**	**0.03**		**0.028**						**0.13**
Beryllium	mg/L		**0.000515**	**0.000196**	**0.00019**	**0.012**	**0.0048**	**0.00038 J**	0.001 U		**0.0052**						**0.000546**
Bicarbonate Alkalinity as CaCO3	mg/L	**550**									**71**	**140**	5 U	**280**	**270**	**230**	
Bicarbonate Alkalinity as HCO3	mg/L																
Boron	mg/L	**0.43**	**0.448**	**0.423**	**0.463**	**0.23**	**0.25**	**0.48 B**	**0.48 B**		**0.32**	**0.39**	**0.18**	**0.54**	**0.51**	**0.5**	**0.441**
Bromide	mg/L				0.2 U	5 U	5 U	5 U	5 U								
Cadmium	mg/L		**8E-05**	**0.0001**	**2E-05 J**	**0.00036 J**	**0.00024 J**	0.001 U	0.001 U		**0.00027 J**						**5E-05**
Calcium	mg/L	**50**	**189**	**208**	**177**	**210 B**	**200**	**72**	**130**		**150**	**150**	**160**	**92**	**120**	**140**	**9.41**
Carbonate Alkalinity as CaCO3	mg/L	5 U									5 U	5 U	5 U	5 U	5 U	5 U	
Chloride	mg/L	**3400**	**34.3**	**16.1**	**11.6**	**16**	**20**	**35**	**19**		**19**	**21**	**20**	**31**	**14**	**15**	**413**
Chromium	mg/L		**0.0034**	**0.0027**	**0.00261**	**0.0028 J**	0.002 U	0.002 U	0.002 U		0.002 U						**0.0022**
Cobalt	mg/L		**0.0234**	**0.0266**	**0.00693**	**0.3**	**0.29**	**0.012**	**0.0063**		**0.2**						**0.00204**
Conductivity, Field	uS/cm	**10609**	**3013**	**2934**	**2473**					**2256**				**2396**	**2274**	**2131**	**2462**
Copper	mg/L						0.002 U	0.002 U	**0.0034**								
Dissolved Oxygen, Field	mg/L		**4.65**	**3.74**	**1.71**					**0.12**							**0.68**
Dissolved Solids, Total	mg/L	**4500**	**2300**	**2160**	**1700**	**1800**	**1900 J**	**1800**	**1600 J**		**1600**	**1500**	**1600**	**1500 J**	**1700**	**1500**	**1940**
Fluoride	mg/L	**0.97**	**0.8**	**0.72**	**0.67**	**2.3**	**2.3**	**1.4**	**1.2**		**1.4**	**1.1**	**2.6**	**1.2**	**1**	**0.81**	**3.32**
Iron	mg/L						**30**	**0.94**	**0.14**								
Lead	mg/L		**0.00648**	**0.00278**	**0.00277**	**0.0014 J**	0.001 U	**0.00045 J**	0.001 U		0.001 U						**0.00565**
Lithium	mg/L		**0.096**	**0.081**	**0.053**	**0.18**	**0.2**	**0.069**	**0.054**		**0.16**						**0.08**
Magnesium	mg/L	**17**			**33.6**		**73**	**17**	**26**			**53**	**69**	**19**	**23**	**28**	
Manganese	mg/L					**18 B**	**17**	**1.6**	**0.99**								
Mercury	mg/L		**8E-06**	**2E-06 J**	**1.5E-05**	0.0002 U	0.0002 U	0.0002 U	0.0002 U		0.0002 U						**2.5E-05**
Molybdenum	mg/L		**0.0126**	**0.0114**	**0.00812**	**0.0065 J**	**0.0042 J**	**0.02**	**0.0068 J**		**0.003 J**						**0.0557**
Nickel	mg/L						**0.27**	**0.018**	**0.0061**								
pH, Field	pH units	**7.68**	**7.18**	**6.99**	**7.35**	**6.46**	**6.19**	**7.2**	**7.49**	**7.14**	**6.04**	**6.59**	**5.31**	**7.42**	**7.36**	**7.23**	**9.5**
Potassium	mg/L	**9.3**			**6.7**	**10 JB**	**11**	**5.3**	**5.8**			**15**	**11**	**5.5**	**5.8**	**6**	
Radium-226	pCi/L		**0.634**	**0.403**	**0.968**	**0.476**	**0.475**	**0.335**	**0.05 U**		**0.328**						**1.21**
Radium-226/228	pCi/L		**2.434**	**1.963**	**1.64**	**0.764**	**0.926**	**0.607**	**0.702**		**0.72**						**1.566**
Radium-228	pCi/L		**1.8**	**1.56**	**0.672**	**0.288 U**	**0.451**	**0.272 U**	**0.652 J**		**0.393 U**						**0.356**
Redox Potential, Field	mV		**36.1**	**136.7**	**227.2**												**97.1**
Selenium	mg/L		**0.0009**	**0.0005**	**0.0006**	**0.0053 J**	**0.0017 J**	**0.0014 J**	**0.001 JB**		0.005 U						**0.001**
Silver	mg/L						0.001 U	0.001 U	0.001 U								
Sodium	mg/L	**2100**			**287**	**160 JB**	**190**	**490 B**	**330**			**280**	**150**	**420**	**350**	**330**	
Strontium	mg/L				**3.22**	**1.5 JB**	**1.4**	**1.3 B**	**2.6**								
Sulfate	mg/L	**28**	**1290**	**1320**	**973**	**1200**	**1700**	**1000**	**1000**		**1100**	**1100**	**1100**	**1200**	**1100**	**910**	**99.2**
Temperature, Field	deg C	**14**	**14.3**	**14.6**	**13.3**					**12.2**				**13**	**13**	**14**	**16.5**
Thallium	mg/L		**5E-05 J**	**8E-05 J**	**2E-05 J**	0.001 U	0.001 U	0.001 U	0.001 U		0.001 U						**6.4E-05**
Turbidity, Field	NTU	**76.1**	**141.2**	**65**	**49.6**	**113.6**	**87.4**	**19.2**	**30.7**	**7**	**69.4**		**85**	**4**	**10.5**	**9.8**	**737**
Vanadium	mg/L																
Zinc	mg/L						**0.61**	**0.018 J**	0.02 U								

Notes:
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Appendix A
Analytical Data Summary
Residual Waste Landfill and Fly Ash Reservoir
Gavin Power Plant

Program		FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL
Location ID		96154R	96154R	96154R	96154R	96154R	96154R	96154R	96154R	96154R	96154R	96154R	96154R	96154R	96154R	96156	96156
Date		2016-10-03	2016-11-29	2017-01-30	2017-03-21	2017-04-25	2017-06-06	2017-07-12	2018-03-22	2018-09-13	2019-03-29	2019-03-29	2019-09-19	2020-03-12	2020-09-14	2016-08-23	2016-10-03
Sample Type		N	N	N	N	N	N	N	N	N	FD	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L		**558**	**607**	**600**					**460**	**350**	**350**	**280**	**560**	**530**		
Aluminum	mg/L					**0.42**	**1.4**	**0.96 B**									
Antimony	mg/L	**0.00098**	**0.00046**	**0.00078**	**0.0014 J**	**0.0014 J**	0.002 U	**0.0006 JB**								**0.0001 J**	**0.00141**
Arsenic	mg/L	**0.00668**	**0.00409**	**0.00277**	**0.0049 J**	**0.0093**	**0.0022 J**	**0.0025 J**								**0.0141**	**0.0184**
Barium	mg/L	**0.115**	**0.219**	**0.194**	**0.28 JB**	**0.067**	**0.12**	**0.11**								**16.2**	**17.4**
Beryllium	mg/L	**0.000319**	**0.000679**	**0.000166**	0.001 U	0.001 U	0.001 UJ	0.001 U								0.0002 U	**0.000129**
Bicarbonate Alkalinity as CaCO3	mg/L									**110**	5 U	5 U	5 U	**280**	**470**		
Bicarbonate Alkalinity as HCO3	mg/L																
Boron	mg/L	**0.395**	**0.504**	**0.454**	**0.49**	**0.5**	**0.53 B**	**0.53 B**			**0.38**	**0.38**	**0.39**	**0.43**	**0.45**	**0.394**	**0.357**
Bromide	mg/L		**1.48**	**1.36**	**1.5 J**	**1.4 J**	**2.4**	**1.8 J**									
Cadmium	mg/L	**2E-05**	**4E-05**	**4E-05**	0.001 U	0.001 U	0.001 U	0.001 U								**0.00022**	**0.00221**
Calcium	mg/L	**5.34**	**10.5**	**22.1**	**31 B**	**2.1**	**4.8**	**4.3**		**3.2**	**61**	**61**	**26**	**17**	**7**	**409**	**354**
Carbonate Alkalinity as CaCO3	mg/L									**350**	**130**	**130**	**180**	**280**	**58**		
Chloride	mg/L	**452**	**410**	**446**	**410**	**410**	**470**	**490**		**410**	**340**	**330**	**350**	**490**	**470**	**11700**	
Chromium	mg/L	**0.0057**	**0.0121**	**0.00249**	**0.0051 J**	0.002 U	**0.0078 J**	**0.0013 J**								**0.0011**	**0.0195**
Cobalt	mg/L	**0.00176**	**0.00443**	**0.000799**	**0.00095 J**	**0.00037 J**	**0.00042 J**	**0.00022 J**								**0.00194**	**0.00371**
Conductivity, Field	uS/cm	**2602**	**2562**	**2549**					**2650**					**2483**	**2545**	**30150**	**32283**
Copper	mg/L					0.002 U	**0.0043 B**	0.002 U									
Dissolved Oxygen, Field	mg/L	**0.59**	**1.16**	**1.02**					**0.15**							**2.61**	**2.64**
Dissolved Solids, Total	mg/L	**1550**	**1850**	**1590**	**1400**	**1400 J**	**1500**	**1500 J**			**860**	**850**	**900**	**1400**	**1400**	**18300**	
Fluoride	mg/L	**3.36**	**3.4**	**3.33**	**4.2**	**4.5**	**4.1**	**4.5**		**4.4**	**3.3**	**3.3**	**3.9**	**4**	**4.2**	**0.33**	
Iron	mg/L					**0.29**	**1.4**	**0.64**									
Lead	mg/L	**0.00371**	**0.00967**	**0.0031**	**0.0021 J**	0.001 U	**0.00077 J**	**0.00048 J**								**0.00236**	**0.0218**
Lithium	mg/L	**0.054**	**0.04**	**0.137**	**0.24**	**0.19**	**0.048**	**0.049**								**0.269**	**0.252**
Magnesium	mg/L		**4.24**	**1.48**		**0.55 J**	**1.5**	**1.4**		**0.51 J**	**0.34 J**	**0.41 J**	**0.24 J**	**1.5**	**1.3**		
Manganese	mg/L				**0.02 B**	**0.011**	**0.013**	**0.0053**									
Mercury	mg/L	**1E-05**	**3E-05**	**1.8E-05**	0.0002 U	0.0002 U	0.0002 U	0.0002 U								5E-06 U	0.0002 U
Molybdenum	mg/L	**0.102**	**0.0724**	**0.0692**	**0.09 J**	**0.093**	**0.1**	**0.1**								**0.00987**	**0.017**
Nickel	mg/L					0.002 U	**0.0028**	0.002 U									
pH, Field	pH units	**9.36**	**8.67**	**9.64**	**10.67**	**10.32**	**8.76**	**8.82**	**9.85**	**10.11**		**12.06**	**11.7**	**9.76**	**8.93**	**7.07**	**6.83**
Potassium	mg/L		**7.64**	**33.8**	**58 JB**	**41**	**6**	**6.1**		**12**	**20**	**20**	**10**	**7.2**	**3.6**		
Radium-226	pCi/L	**0.53**	**1.68**	**0.96**	**0.696**	**0.664**	**0.251**	**0.213**								**33.8**	
Radium-226/228	pCi/L	**1.434**	**2.328**	**1.762**	**1.21**	**0.894**	**0.655**	**0.577**								**75.85**	**41.96**
Radium-228	pCi/L	**0.904**	**0.648**	**0.802**	**0.51**	**0.23 U**	**0.405**	**0.364 UJ**								**42.05**	**41.96**
Redox Potential, Field	mV	**54.8**	**175.9**	**139.8**												**-82.4**	**-66.3**
Selenium	mg/L	**0.001**	**0.002**	**0.0006**	**0.00096 J**	0.005 U	0.005 U	0.005 U								**0.0006 J**	**0.0004 J**
Silver	mg/L					0.001 U	**0.0017**	**0.00021 J**									
Sodium	mg/L		**478**	**449**	**540 JB**	**510**	**540 B**	**590**		**450**	**340**	**340**	**320**	**520**	**500**		
Strontium	mg/L		**0.425**	**1.37**	**2.6 JB**	**0.57**	**0.36 B**	**0.38**									
Sulfate	mg/L	**87.4**	**125**	**66.8**	**64**	**60**	**100**	**100**		**42**	**29**	**29**	**33**	**33**	**36**	**1.9**	
Temperature, Field	deg C	**14.4**	**13.3**	**11.2**					**12.6**					**13**	**14**	**15.2**	**16.1**
Thallium	mg/L	**0.000144**	**0.000121**	**0.000114**	0.001 U	0.001 U	0.001 U	0.001 U								0.0005 U	**0.0002 J**
Turbidity, Field	NTU	**209.7**	**642.7**	**349.1**	**98.6**	**63.9**	**44.8**	**16.2**	**6**	**6.23**			**41**	**140**	**87.9**	**9**	**38.2**
Vanadium	mg/L																
Zinc	mg/L					0.02 U	0.02 U	0.02 U									

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Gavin Power Plant

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Location ID		96156	96156	96156	96156	96156	96156	96156	9801	9801	9801	9801	9801	9801	9801	9801	9801
Date		2016-11-29	2017-01-30	2017-03-21	2017-04-25	2017-06-06	2017-07-12	2018-03-26	2016-08-24	2016-10-06	2016-12-02	2017-02-01	2017-03-29	2017-06-09	2017-06-09	2017-07-17	2018-03-16
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	FD	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L		**165**	**150**							**141**	**160**					**130**
Aluminum	mg/L				0.05 U	**0.079**	**0.084 B**						0.25 U	1.3 U	1.3 U	0.1 U	
Antimony	mg/L	**0.00208**	**0.00022**	**0.0025**	0.002 U	**0.0017 J**	**0.0012 JB**		0.0005 U	0.0005 U	5E-05 U	0.0005 U	0.01 U	0.05 U	0.05 U	0.004 U	
Arsenic	mg/L	**0.0398**	**0.00202**	**0.0035 J**	**0.0042 J**	**0.0043 J**	**0.0036 J**		**0.00075**	**0.00109**	**0.00072**	**0.00056**	0.025 U	0.13 U	0.13 U	0.01 U	
Barium	mg/L	**17.7**	**14.8**	**16 JB**	**16**	**16**	**15**		**5.16**	**4.84**	**4.63**	**4.33**	**5 B**	**4.7 B**	**5 B**	**5.3**	
Beryllium	mg/L	**0.0003 J**	2E-05 U	**0.00043 J**	0.001 U	0.001 UJ	0.001 U		0.0002 U	0.0002 U	2E-05 U	0.0002 U	0.005 U	0.001 U	0.001 U	0.002 U	
Bicarbonate Alkalinity as CaCO3	mg/L																**130**
Bicarbonate Alkalinity as HCO3	mg/L																
Boron	mg/L	**0.375**	**0.379**	**0.46**	**0.4**	**0.43 B**	**0.4 B**		**0.378**	**0.329**	**0.353**	**0.404**	**0.42**	**0.45**	**0.45**	**0.52 JB**	**0.44**
Bromide	mg/L		**58.6**	**57**	**73**	**67**	**51**				**34.3**	**36.2**	**41**	**36 J**	**35 J**	**39 J**	
Cadmium	mg/L	**0.00419**	**0.0001**	**0.00043 J**	**0.00027 J**	**0.00088 J**	**0.0015**		0.0002 U	0.0002 U	2E-05 U	0.0002 U	0.005 U	0.025 U	0.025 U	0.002 U	
Calcium	mg/L	**399**	**346**	**380 B**	**380**	**390**	**370**		**202**	**198**	**184**	**180**	**180 B**	**170**	**190**	**200**	**220**
Carbonate Alkalinity as CaCO3	mg/L																5 U
Chloride	mg/L		**12000**	**13000**	**17000**	**12000**	**12000**		**7930**	**7950**	**7210**	**7330**	**8800**	**8300**	**8100**	**9000**	**8300**
Chromium	mg/L	**0.0598**	**0.000629**	**0.0011 J**	0.002 U	**0.0077 J**	**0.016**		**0.0045**	**0.0024**	**0.00216**	**0.000768**	**0.0017 J**	0.05 U	0.05 U	**0.0025 J**	
Cobalt	mg/L	**0.00517**	**0.00145**	**0.0021**	**0.0016**	**0.0015**	**0.0017**		**0.00173**	**0.00172**	**0.000975**	**0.000957**	**0.0014 J**	0.025 U	0.025 U	**0.0011 J**	
Conductivity, Field	uS/cm	**17682**	**30266**					**32509**	**2129**	**23618**	**23470**	**22980**					**22901**
Copper	mg/L				**0.82**	**1.3 B**	**1.3**						0.01 U	0.05 U	0.05 U	0.004 U	
Dissolved Oxygen, Field	mg/L	**5.31**	**4.89**					**0.24**	**3.03**	**0.71**	**2.8**	**1.53**					**0.22**
Dissolved Solids, Total	mg/L		**18100**	**15000**	**19000 J**	**21000**	**15000 J**		**12600**	**13000**	**12300**	**11300**	**13000 J**	**14000**	**14000**	**14000 J**	**13000**
Fluoride	mg/L		2 U	2.5 U	5 U	1.3 U	2.5 U		**0.87**	**0.61**	**0.6 J**	**0.91**	**1 J**	5 U	5 U	5 U	2.5 U
Iron	mg/L				**4.5**	**7.7**	**2.7**						**0.51 JB**	2.5 U	2.5 U	**0.43**	
Lead	mg/L	**0.0455**	**0.00115**	**0.0022 J**	0.001 U	**0.0055**	**0.0033**		**0.0001 J**	**0.0001 J**	**0.000354**	**9E-05 J**	0.005 U	0.005 U	0.005 U	0.002 U	
Lithium	mg/L	**0.296**	**0.294**	**0.22**	**0.25**	**0.25**	**0.23**		**0.141**	**0.142**	**0.16**	**0.159**	**0.12**	**0.13**	**0.12**	**0.15**	
Magnesium	mg/L	**117**	**111**		**130**	**140**	**130**				**54.6**	**55.2**	**63 B**	**58**	**63**	**63**	**61**
Manganese	mg/L			**0.93 B**	**0.75**	**0.79**	**0.74**						**0.57**	**0.44**	**0.47**	**0.51**	
Mercury	mg/L	**2.1E-05**	**1.1E-05**	0.0002 U	0.0002 U	0.0002 U	0.0002 U		5E-06 U	**1.6E-05**	**1.6E-05**	**1E-05**	0.0002 U	0.0002 U	0.0002 U	0.0002 U	
Molybdenum	mg/L	**0.0225**	**0.0054**	**0.0056 J**	**0.0073 J**	**0.017**	**0.0086 J**		**0.00533**	**0.00723**	**0.00651**	**0.0068**	**0.0042 J**	0.05 U	0.05 U	**0.004 J**	
Nickel	mg/L				**0.0045**	**0.0049**	**0.055**						0.01 U	0.05 U	0.05 U	**0.0035 J**	
pH, Field	pH units	**7.23**	**6.77**	**8.93**	**8.32**	**7.26**	**8.04**	**7.4**	**6.95**	**7.16**	**6.92**	**7.03**	**7.2**		**7.21**	**7.16**	**7.32**
Potassium	mg/L	**36.5**	**47.4**	**22 JB**	**22**	**22**	**21**				**14.4**	**18.6**	**9.6 B**	**8.3 J**	**9.3 J**	**9.5**	**9.2**
Radium-226	pCi/L		**51.2**	**94**	**86.5**	**64.4**	**59.3 J**		**3.39**	**6.84**	**3.47**	**4.19**	**4.48**	**4.49**	**3.83**	**4.35 J**	
Radium-226/228	pCi/L		**122.3**	**189**	**189**	**138**	**119 J**		**8.15**	**13.99**	**7.83**	**9.95**	**10.5**	**10.3**	**11.3**	**11 J**	
Radium-228	pCi/L		**71.1**	**95.2**	**103**	**73.4**	**60.2**		**4.76**	**7.15**	**4.36**	**5.76**	**5.98**	**5.8**	**7.43**	**6.64 J**	
Redox Potential, Field	mV	**176.5**	**102.7**						**124.2**	**-91.8**	**85.3**	**-87.4**					
Selenium	mg/L	**0.001 J**	**0.0001**	**0.0013 J**	0.005 U	**0.00091 J**	**0.0011 JB**		0.001 U	0.001 U	0.001 U	0.001 U	0.025 U	0.13 U	0.13 U	0.01 U	
Silver	mg/L				**6.6E-05 J**	0.001 U	**8.9E-05 J**						0.005 U	0.005 U	0.005 U	0.002 U	
Sodium	mg/L	**2620**	**1400**	**6800 JB**	**6100**	1 U	**6400**				**4310**	**1650**	**4400 JB**	**4200**	**4700**	**4600 JB**	**4700**
Strontium	mg/L	**30.4**	**25.3**	**31 JB**	**33**	**31 B**	**27**				**16.4**	**15.6**	**19 B**	**13 B**	**13 B**	**20**	
Sulfate	mg/L		**1 J**	50 U	100 U	25 U	50 U		**3.4**	**7.2**	**6.7**	**3.4**	**8.6 J**	100 U	100 U	100 U	50 U
Temperature, Field	deg C	**15.7**	**9.1**					**12.7**	**19.72**	**16.5**	**14.2**	**13.5**					**14.9**
Thallium	mg/L	**0.0002 J**	**3E-05 J**	0.001 U	0.001 U	0.001 U	0.001 U		**0.0002 J**	**0.0001 J**	**0.000528**	0.0005 U	0.005 U	0.005 U	0.005 U	0.002 U	
Turbidity, Field	NTU	**123.8**	**64.8**	**81.7**	**72.5**	**83.2**	**48**	**1**	**4.7**	**9.7**	**3**	**3.9**	**7.7**		**3.2**	**3.5**	**1.5**
Vanadium	mg/L															0.01 U	
Zinc	mg/L				**0.19**	**0.18**	**0.16**						0.1 U	0.5 U	0.5 U	0.04 U	

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Residual Waste Landfill and Fly Ash Reservoir
Gavin Power Plant

Program		FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL
Location ID		9801	9801	9801	9801	9802	9802	9802	9802	9802	9802	9802	9802	9802	9802	9802	9802
Date		2018-09-12	2019-03-12	2019-09-24	2020-03-24	2016-08-24	2016-10-06	2016-12-02	2017-02-01	2017-03-29	2017-06-09	2017-07-17	2018-03-16	2018-09-12	2019-03-12	2019-09-24	2020-03-24
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L	**130**	**140**	**130**	**140**			**796**	**645**				**610**	**570**	**590**	**590**	**610**
Aluminum	mg/L									**0.071 J**	**0.22**	0.05 U					
Antimony	mg/L	0.002 U				**3E-05 J**	**4E-05 J**	**2E-05 J**	**3E-05 J**	**0.00034 J**	0.002 U	0.002 U					
Arsenic	mg/L	0.005 U				**0.00091**	**0.00072**	**0.0012**	**0.00103**	**0.00094 J**	**0.00083 J**	**0.00089 J**					
Barium	mg/L	**4.8**				**0.0781**	**0.0711**	**0.0664**	**0.069**	**0.08 B**	**0.086 B**	**0.082**					
Beryllium	mg/L	0.001 U				**5E-06 J**	2E-05 U	**7E-06 J**	**6E-06 J**	0.001 U	**0.00035 J**	0.001 U					
Bicarbonate Alkalinity as CaCO3	mg/L	**130**		**130**	**140**								**610**	**570**		**590**	**610**
Bicarbonate Alkalinity as HCO3	mg/L		**140**												**590**		
Boron	mg/L	**0.44**	**0.44**	**0.42**	**0.38**	**0.172**	**0.157**	**0.178**	**0.242**	**0.18**	**0.19**	**0.27 JB**	**0.2**		**0.2**	**0.21**	**0.22**
Bromide	mg/L							**0.499**	**0.157**	2.5 U	2.5 U	2.5 U					
Cadmium	mg/L	0.001 U				**2E-05**	**1E-05 J**	**0.0001**	**5E-05**	0.001 U	0.001 U	0.001 U					
Calcium	mg/L	**200**	**180**	**250**	**180**	**29.3**	**28.7**	**24.5**	**28**	**29 B**	**31 J**	**30**	**30**	**36**	**31**	**26**	**26**
Carbonate Alkalinity as CaCO3	mg/L	5 U	5 U	5 U	5 U								5 U	5 U	5 U	5 U	5 U
Chloride	mg/L	**8400**	**150**	**9300**	**8900**	**36.1**	**35.2**	**39.1**	**38**	**39**	**38**	**40**	**39**	**35**	**39**	**38**	**41**
Chromium	mg/L	**0.0018 J**				**0.0013**	**0.0028**	**0.00206**	**0.000823**	**0.00081 J**	**0.0025**	**0.0011 J**					
Cobalt	mg/L	**0.0015**				**0.000954**	**0.00112**	**0.000847**	**0.00108**	**0.0011**	**0.00048 J**	**0.00041 J**					
Conductivity, Field	uS/cm				**21314**	**1311**	**1361**	**1354**	**1366**				**13.31**				**1265**
Copper	mg/L									**0.00056 JB**	**0.0017 JB**	0.002 U					
Dissolved Oxygen, Field	mg/L					**1.81**	**0.73**	**2.01**	**1.68**				**1.46**				
Dissolved Solids, Total	mg/L	**14000**	**11000 HT**	**14000**	**11000**	**766**	**784**	**796**	**810**	**820 J**	**830**	**810 J**	**810**		**780**	**740**	**780**
Fluoride	mg/L	**1**	0.05 U	**1.1**	**1.1**	**0.88**	**0.8**	**0.8**	**0.84**	**0.96**	**0.99**	**0.95**	**1**	**0.94**	**0.91**	**1**	**1**
Iron	mg/L									**0.18 JB**	**0.27**	**0.058 J**					
Lead	mg/L	0.001 U				**4.4E-05**	**3.1E-05**	**4.3E-05**	**6E-05**	**0.00026 J**	0.001 U	0.001 U					
Lithium	mg/L	**0.13**				**0.015**	**0.018**	**0.022**	**0.012**	**0.014**	**0.012**	**0.014**					
Magnesium	mg/L		**69**	**83 J**	**54**			**6.8**	**7.8**	**8.2 B**	**9**	**8.6**	**8.1**	**9.3**	**8.8**	**7.8**	**7.1**
Manganese	mg/L									**0.48**	**0.1**	**0.28**					
Mercury	mg/L	0.0002 U				5E-06 U	5E-06 U	**1.1E-05**	5E-06 U	0.0002 U	0.0002 U	0.0002 U					
Molybdenum	mg/L	**0.0039 J**				**0.0064**	**0.00563**	**0.00543**	**0.00525**	**0.0051 J**	**0.0046 J**	**0.0048 J**					
Nickel	mg/L									**0.00079 J**	**0.0018 J**	**0.0022**					
pH, Field	pH units	**7.34**	**7.51**	**7.49**	**7.4**	**6.94**	**7.25**	**7.3**	**7.19**	**7.24**	**7.2**	**7.11**	**7.31**	**7.59**	**7.51**	**7.43**	**7.4**
Potassium	mg/L		**9.1**	**12 J**	**8.7**			**1.66**	**2.05**	**1.5 B**	**1.5**	**1.6**	**1.5**	**1.9**	**1.7**	**1.6**	**1.6**
Radium-226	pCi/L	**5.31**				**0.443**	**0.327**	**0.603**	**0.245**	**0.173**	**0.181**	**0.188**					
Radium-226/228	pCi/L	**11.5**				**2.763**	**0.638**	**0.832**	**0.506**	**0.31 U**	**0.276 U**	**0.786**					
Radium-228	pCi/L	**6.16**				**2.32**	**0.311**	**0.229**	**0.261**	**0.136 U**	**0.0949 U**	**0.597**					
Redox Potential, Field	mV					**14.6**	**-32.9**	**9**	**-49.4**								
Selenium	mg/L	0.005 U				**5E-05 J**	**4E-05 J**	**3E-05 J**	**5E-05 J**	0.005 U	0.005 U	**0.0012 J**					
Silver	mg/L									0.001 U	0.001 U	0.001 U					
Sodium	mg/L		**4800**	**4400**	**4200**			**253**	**270**	**260 JB**	**270**	**290 JB**	**290**	**260**	**290**	**300**	**280**
Strontium	mg/L							**0.58**	**0.601**	**0.62 B**	**0.55 B**	**0.65**					
Sulfate	mg/L	**6.3 J**	1 U	**5.2 J**	**8.9 J**	**65.8**	**57.5**	**60.2**	**58.9**	**70 J**	**72**	**71**	**68**	**68**	**73**	**69**	**70**
Temperature, Field	deg C				**14**	**20.37**	**18.2**	**14.3**	**13.6**				**16.8**				**16**
Thallium	mg/L	0.001 U				**5.8E-05**	**8.4E-05**	**5.8E-05**	**5E-05 J**	0.001 U	0.001 U	0.001 U					
Turbidity, Field	NTU	**4.22**		**6**	**1.4**	**0.4**	**2.5**	**14.4**	**6.5**	**6.9**	**1.6**	**7.5**	**2.1**	**35.3**		**5**	**0.8**
Vanadium	mg/L											0.005 U					
Zinc	mg/L									0.02 U	0.02 U	0.02 U					

Notes:
FD = Field duplicate sample
N = Normal environmental sample
deg C = Degree Celcius
mg/L = Milligrams per liter
mV = Milivolts
NTU = Nephelometric Turbidity Unit
uS/cm = Microsiemens per centimeter
pCi/L = Picocuries per liter
B: Compound was found in the blank and sample.
J: Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.
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Empty cells = Not analyzed

Appendix A
Analytical Data Summary
Residual Waste Landfill and Fly Ash Reservoir
Gavin Power Plant

Program		FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL
Location ID		9802	9806	9806	9806	9806	9806	9806	9806	9806	9806	9806	9806	9910	9910	9910	9910
Date		2020-09-22	2016-12-02	2017-02-08	2017-03-27	2017-05-01	2017-06-27	2018-03-20	2018-09-11	2019-03-14	2019-09-26	2020-03-25	2020-09-17	2016-10-03	2018-09-25	2019-03-26	2019-09-22
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit																
Alkalinity, Total as CaCO3	mg/L	**590**	**350**	**346**				**330**	**330**	**390 B**	**320**	**370**	**350**		**830**	**860**	**850**
Aluminum	mg/L				**2.4 J**	**2.8**	**0.057**										
Antimony	mg/L		**0.00011**	**6E-05**	**0.0003 JB**	**0.00068 J**	0.002 U		0.002 U	0.002 U							
Arsenic	mg/L		**0.00207**	**0.00113**	**0.0011 J**	**0.0015 J**	**0.001 J**		0.005 U	0.005 U							
Barium	mg/L		**0.0676**	**0.05**	**0.057 B**	**0.058**	**0.041**		**0.031**	**0.033**							
Beryllium	mg/L		**0.000269**	**0.000122**	0.001 U	**0.00038 J**	0.001 U		**0.00061 JF2F1**	0.001 U							
Bicarbonate Alkalinity as CaCO3	mg/L	**590**						**300**	**310**	**390 B**	**300**	**370**	**340**		**830**	**840**	**840**
Bicarbonate Alkalinity as HCO3	mg/L																
Boron	mg/L	**0.24**	**0.256**	**25**	**0.31**	**0.32**	**0.35**	**0.29**	**0.27**	**0.23**	**0.3**	**0.22**	**0.21**		**0.52**	**0.52**	**0.49**
Bromide	mg/L		**0.82**	**0.65**	**0.94 J**	**0.77 J**	**0.96**			**0.23 J**							
Cadmium	mg/L		**0.00037**	**0.0001**	0.001 U	0.001 U	0.001 U		0.001 U	0.001 U							
Calcium	mg/L	**26**	**5.35**	**159**	**4 B**	**4.2**	**3.7**	**3.6**	**9.6**	**37**	**4.1**	**31**	**37**		**12**	**13**	**13**
Carbonate Alkalinity as CaCO3	mg/L	5 U						**22**	**19**	5 U	**26**	5 U	**7.3**		5 U	**23**	**6.9**
Chloride	mg/L	**47**	**187**	**191**	**200**	**200**	**200**	**210**	**94**	**38**	**190**	**53**	**51**		**840**	**880**	**800**
Chromium	mg/L		**0.00653**	**0.00291**	**0.004 B**	**0.0054**	0.002 U		0.002 U	**0.0015 J**							
Cobalt	mg/L		**0.00516**	**0.00231**	**0.0016**	**0.0017**	0.001 U		0.001 U	**0.00046 J**							
Conductivity, Field	uS/cm	**1284**	**1500**	**1574**				**1533**				**1666**	**1691**	**4918**			
Copper	mg/L				**0.0031 B**	**0.0066 B**	0.002 U										
Dissolved Oxygen, Field	mg/L		**1.44**	**1.25**				**1.78**						**1.58**			
Dissolved Solids, Total	mg/L	**790**	**860**	**874**	**890 J**	**860 J**	**870**	**880**	**850**	**1000**	**1900**	**930**	**1100**		**2400**	**2900**	**2700**
Fluoride	mg/L	**0.9**	**1.14**	**1.08**	**1.4**	**1.3**	**1.3**	**1.3**	**0.87**	**0.34**	**1.4**	**0.44**	**0.39**		**2**	**1.9**	**2**
Iron	mg/L				**2 JB**	**2.2**	**0.058 J**										
Lead	mg/L		**0.00481**	**0.00227**	**0.0018 J**	**0.0028**	0.001 U		0.001 U	0.001 U							
Lithium	mg/L		**0.022**	**0.249**	**0.013**	**0.012**	**0.012**		**0.036 F2F1**	**0.045**							
Magnesium	mg/L	**7**	**2.21**	**171**	**1.4 B**	**1.5**	**0.92 J**	**0.85 J**			**1.5**	**13**	**16**		**4**	**4.2**	**4.3**
Manganese	mg/L				**0.034 B**	**0.03**	**0.02 B**										
Mercury	mg/L		**0.000131**	**6E-06**	0.0002 U	0.0002 U	0.0002 U		0.0002 U	0.0002 U							
Molybdenum	mg/L		**0.011**	**0.0107**	**0.012**	**0.011**	**0.023**		**0.0061**	**0.0023 J**							
Nickel	mg/L				**0.0037 B**	**0.0036**	0.002 U										
pH, Field	pH units	**7.32**	**8.61**	**8.49**	**8.59**	**8.4**	**8.4**	**8.64**	**8.5**	**7.74**	**8.73**	**7.86**	**8.2**	**7.58**	**7.64**	**7.76**	**7.8**
Potassium	mg/L	**1.5**	**2.09**	**18.4**	**1.6 B**	**1.7**	**0.84 J**	**0.96 J**			**1.1**	**2.9**	**3.2**		**2.9**	**3.2**	**3**
Radium-226	pCi/L		**0.658**	**0.221**	**0.154**	**0.149**	**0.199**		**0.151**	**0.0571 U**							
Radium-226/228	pCi/L		**0.7334**	**0.711**	**0.378**	**0.235 U**	**0.353**		**0.257 U**	**0.0148 U**							
Radium-228	pCi/L		**0.0754**	**0.49**	**0.224 U**	**0.0855 U**	**0.154 U**		**0.106 U**	**-0.0422 U**							
Redox Potential, Field	mV		**-14.2**	**69.1**										**208.7**			
Selenium	mg/L		**0.0007**	**0.0003**	0.005 U	**0.0011 J**	0.005 U		**0.0015 J**	**0.00098 J**							
Silver	mg/L				**0.00084 J**	**0.0012**	0.001 U										
Sodium	mg/L	**290**	**277**	**213**	**320 JB**	**350 B**	**350**	**320**			**320**	**310**	**350**		**1100**	**1100**	**1000**
Strontium	mg/L		**0.166**	**1.28**	**0.15 B**	**0.16 B**	**0.13**										
Sulfate	mg/L	**73**	**116**	**113**	**130 J**	**130**	**130**	**130**	**240**	**450**	**130**	**510**	**490**		**110**	**120**	**100**
Temperature, Field	deg C	**17**	**11**	**12.4**				**11.8**				**13**	**14**	**16.7**			
Thallium	mg/L		**7E-05**	**4E-05 J**	0.001 U	0.001 U	0.001 U		0.001 U	0.001 U							
Turbidity, Field	NTU	**1**	**301.9**	**74.3**	**110.6**	**40.6**	**53.8**	**13**	**4.33**		**32**	**2.3**	**0.8**	**184.3**	**46.5**		**69**
Vanadium	mg/L																
Zinc	mg/L				**0.0093 J**	0.02 U	0.02 U										

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mg/L = Milligrams per liter
mV = Milivolts
NTU = Nephelometric Turbidity Unit
uS/cm = Microsiemens per centimeter
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Program		FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL	FEDERAL
Location ID		9910	9910	MW-17	MW-20	MW-20	MW-20	MW-20	MW-20	MW-20	MW-20	MW-20	MW-20	MW-20	MW-20
Date		2020-03-15	2020-09-17	2020-09-11	2016-08-23	2016-10-05	2016-12-01	2017-04-25	2017-06-06	2017-07-14	2018-03-26	2019-09-19	2020-03-15	2020-03-24	2020-09-15
Sample Type		N	N	N	N	N	N	N	N	N	N	N	N	N	N
Analyte	Unit														
Alkalinity, Total as CaCO3	mg/L	**870**	**840**	**270**			**259**					**150**	**170**	**170**	**160**
Aluminum	mg/L							0.05 U	**0.043 J**	**0.15**					
Antimony	mg/L				**4E-05 J**	0.0002 U	0.0001 U	0.002 U	0.002 U	0.002 U					
Arsenic	mg/L				**0.00938**	**0.01**	**0.00917**	**0.0048 J**	**0.0086**	**0.013**					
Barium	mg/L				**0.0274**	**0.0228**	**0.0233**	**0.025**	**0.027**	**0.029**					
Beryllium	mg/L				**0.000234**	**0.000265**	**0.000276**	**0.00032 J**	**0.00055 J**	**0.00088 J**					
Bicarbonate Alkalinity as CaCO3	mg/L	**850**	**840**	**270**								**150**	**170**	**170**	**160**
Bicarbonate Alkalinity as HCO3	mg/L														
Boron	mg/L	**0.51**	**0.51**	**0.39**	**0.126**	**0.272**	**0.104**	**0.15 J**	**0.19 B**	**0.15**		**0.12**	0.19 U	**0.16**	**0.1**
Bromide	mg/L						**0.422**	5 U	0.5 U	5 U					
Cadmium	mg/L				**8E-05**	**2E-05 J**	4E-05 U	0.001 U	0.001 U	0.001 U					
Calcium	mg/L	**11**	**14**	**94**	**495**	**483**	**465**	**500**	**500**	**500**		**470**	**470**	**470**	**450**
Carbonate Alkalinity as CaCO3	mg/L	**19**	5 U	5 U								5 U	5 U	5 U	5 U
Chloride	mg/L	**850**	**850**	**4500**	**60.1**	**25.2**	**16.4**	**11**	**6.5**	**8.2 J**		**1.9**	**2**	**2.1**	**1.8**
Chromium	mg/L				**0.0028**	**0.0018**	**0.00121**	0.002 U	**0.0018 J**	**0.0025**					
Cobalt	mg/L				**0.128**	**0.134**	**0.143**	**0.13**	**0.13**	**0.14**					
Conductivity, Field	uS/cm	**4626**	**4577**	**12829**	**2819**	**3042**	**2935**				**2817**		**2523**	**2455**	**2402**
Copper	mg/L							0.002 U	0.002 U	0.002 U					
Dissolved Oxygen, Field	mg/L				**2.93**	**1.5**	**4.67**				**1.76**				
Dissolved Solids, Total	mg/L	**2900**	**2300**	**7500**	**2660**	**2710**	**2620**	**2500 J**	**2600**	**2600 J**		**2600**	**2500 J**	**2100**	**2100**
Fluoride	mg/L	**2**	**2**	**1.4**	**0.95**	**1**	**1**	**1.2**	**0.93**	**0.9**		**1.3**	**1.3**	**1.2**	**1.3**
Iron	mg/L							**27**	**32**	**37**					
Lead	mg/L				**0.000201**	**0.00013**	**3E-05 J**	0.001 U	0.001 U	**0.00089 J**					
Lithium	mg/L				**0.174**	**0.171**	**0.188**	**0.16**	**0.16**	**0.16**					
Magnesium	mg/L	**3.9**	**4.3**	**18**			**106**	**100**	**100**	**110**		**110**	**110**	**110**	**100**
Manganese	mg/L							**15**	**15**	**16**					
Mercury	mg/L				5E-06 U	5E-06 U	5E-06 U	0.0002 U	0.0002 U	0.0002 U					
Molybdenum	mg/L				**0.0089**	**0.00543**	**0.00249**	**0.0016 J**	**0.002 J**	**0.0027 J**					
Nickel	mg/L							**0.1**	**0.11**	**0.12**					
pH, Field	pH units	**7.88**	**7.8**	**7.29**	**6.88**	**6.52**	**6.5**	**6.51**	**6.52**	**6.51**	**6.56**	**6.35**	**6.4**	**6.81**	**6.36**
Potassium	mg/L	**3**	**3**	**5.3**			**9.01**	**7.8**	**7.8**	**8**		**6.4**	**6.4**	**6.4**	**5.6**
Radium-226	pCi/L				**0.31**	**0.344**	**0.322**	**0.181**	**0.192**	**0.327**					
Radium-226/228	pCi/L				**0.684**	**1.494**	**0.866**	**0.594**	**0.425**	**0.73**					
Radium-228	pCi/L				**0.374**	**1.15**	**0.544**	**0.413**	**0.234 U**	**0.404**					
Redox Potential, Field	mV				**-41**	**-55.5**	**-47.5**								
Selenium	mg/L				**0.0001 J**	**0.0002 J**	**0.0001 J**	0.005 U	0.005 U	**0.0015 J**					
Silver	mg/L							0.001 U	0.001 U	0.001 U					
Sodium	mg/L	**980**	**980**	**2400**			**64.6**	**52**	**51 B**	**53 B**		**26**	**28**	**28**	**27**
Strontium	mg/L						**3.08**	**3.6**	**3.3 B**	**3.2 B**					
Sulfate	mg/L	**110**	**94**	**19**	**1610**	**1810**	**1610**	**2200**	**1700**	**1600**		**1700**	**1800**	**1700**	**1500**
Temperature, Field	deg C	**13**	**14**	**14**	**16.53**	**15.4**	**12.1**				**12.4**		**12**	**13**	**14**
Thallium	mg/L				**0.000598**	**0.00033**	**9E-05 J**	0.001 U	0.001 U	0.001 U					
Turbidity, Field	NTU	**85.3**	**26**	**1.2**	**42.4**	**9.6**	**9.2**	**6.1**	**1.4**	**4.8**	**1**	**67**	**456**	**248**	**123**
Vanadium	mg/L														
Zinc	mg/L							0.02 U	**0.02**	**0.038**					

Notes:
FD = Field duplicate sample
N = Normal environmental sample
deg C = Degree Celcius
mg/L = Milligrams per liter
mV = Milivolts
NTU = Nephelometric Turbidity Unit
uS/cm = Microsiemens per centimeter
pCi/L = Picocuries per liter
B: Compound was found in the blank and sample.
J: Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.
U: Indicates the analyte was analyzed for but not detected.
Empty cells = Not analyzed

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