Braun

Braun Environmental, Inc.

355 S. Teller St., Suite 200, Lakewood, Colorado 80226 Office: 303-697-0950 Fax: 303-697-2140

February 12, 2021 SENT VIA EMAIL

Elliot Russell
Colorado Division of Reclamation, Mining and Safety (DRMS)
1313 Sherman, Room 215
Denver Colorado 80203

Dear Mr. Russell,

Attached are the responses to your Adequacy Review, Technical Revision TR-01, Mineral Mountain Project, Permit M-2014-045, dated November 13, 2020. With the Chinese flu around this last year, it has taken much longer than usual to get the investigative work completed.

Per you orders, the process water residue was sampled for xanthate, background arsenic samples were collected, and additional ABA testing was performed. The responses are in pdf format, and that document includes the Plan to Handle Tailings, along with the original laboratory reports related to the samples.

Let me know if you have any questions or need anything else.

Sincerely,
BRAUN ENVIRONMENTAL, INC.

C. A. Braun, P.E., CPG, REC
enc.
CAB/rl

Responses to Division of Mining Reclamation and Safety (DRMS) Adequacy Review of Letter Dated February 12, 2021

By C. A. Braun

Following are the comments (in Bold) made by DRMS personnel (Elliot Russell) in their November 13, 2020 adequacy review, followed by our responses.

Comment 1

> **The TR-01 application proposes to relocate drums of xanthate off-site and store the drums of xanthate on undisclosed private property until a final use of the xanthate is determined. In accordance to the Board Order for Violation MV-2020-021, this proposal does not represent an appropriate disposal plan for the unauthorized xanthate chemicals currently stored on site. Please provide the amount of xanthate currently stored on site. Please provide a plan to appropriately dispose of xanthate stored on site**.

Response:

No xanthate is currently stored on the site. Per the technical revision, and so as to comply with the Board Order as quickly as possible, the applicant removed the xanthate from the permitted area and stored it at a secure location in a manner as recommended by the manufacturer. Following discussions with other regulatory agencies, once the compound is outside the permitted mine site, it falls under the direction of the Colorado Department of Public Health and Environment (CDPHE) and their authority as set out in 6CCR 1007-3 Part 61. From a human health and environment perspective, it is essential that both human health and the environment are protected, thus the criteria used for any chemical, including xanthate, is based on the Us Environmental Protection Agency (EPA) and CDPHE studies and their recommendations. There are no known studies that have been performed by Colorado Division of Mining and Public Safety (DRMS) on xanthate.

As discussed in the Braun Environmental Inc., October 30, 2020 report, xanthate has been determined by the US Environmental Protection Agency (EPA) under the Resource Conservation and Recovery Act (RCRA) to be neither a hazardous waste nor a hazardous substance. More locally, the CDPHE is in agreement with EPA and it does not appear on any of their lists for hazardous chemicals. The DRMS, for

this particular permit, has deemed xanthate a “Designated Chemical”. However, other mining permits that have been issued by that agency have not called it such, and this inconsistency seems appropriate, since the definition of a “Designated Chemical” has been written in such a way that ordinary breakfast grape juice could be termed a designated chemical.

CDPHE personnel were contacted at the time of the removal, and they had no concern about it, as long as Mr. Barker handles and stores it in accordance with the manufacture’s recommendations. If he chooses to dispose of this non-hazardous chemical, he would then need to fill out the necessary paperwork for a Subtitle D landfill of his choice and present it to that landfill. If any question should arise by the landfill, they would contact CDPHE, who would inform them that the material is non-hazardous and to proceed with disposal. However, as this chemical is valuable and it is not regulated, it would be in Mr. Barker’s best interest to find another use for it or to pass it to someone else that might use it beneficially. Therefore, as we suggested in the October 30, 2020 report, that the best way to protect the environment would be to use the chemical beneficially and not discard it in a landfill, since manufacturing replacement chemical will cost more of our precious national energy.

Based on the conclusions reached in the October 30, 2020 report, there is one more option. The chemical is known to degrade and thus having a short life, and the investigations found no evidence of any detectable concentrations of xanthates remaining in the sands (tailings), in water tested near the process room, or even in the residue from the evaporated process water in the feed tanks. These findings are entirely consistent with the known chemical characteristics of xanthate, and those findings coupled with the known chemistry lead to the conclusion that Mr. Barker’s use of xanthates has produced no detectable harm to the environment. Further, should Mr. Barker continue to use the chemical in the manner that he has in the past, there appears to be no evidence of its use causing any future harm to the environment. This conclusion is consistent with the experience gained during the many years of historical use of this compound. Therefore, since the currently in-place 110(d) permit allows for the use of designated chemicals, xanthate is a designated chemical at this site and has been demonstrated to cause no harm to the environment, there seems to be no reason that the operator should not be allowed to use this chemical if its use is necessary to make his project economic. It is recommended that if xanthate is used on the site, that it be handled and stored according to the manufacture’s recommendations.

Comment 2

The TR-01 application proposes to dispose of, at a land fill, the remaining xanthate residue after the water is evaporated from the feed tanks. Please provide an estimated amount of xanthate residue that is currently on site. Please provide details on how the xanthate residue will be handled and transported to ensure there are no unauthorized releases to the environment. Please commit to providing appropriate documentation, land fill receipts, and chain of custody forms for the disposal of the xanthate residue.

Response:

Following evaporation of the water, and the removal of a sample for testing, the total amount of residue remaining on the site is less than 5 pounds. Upon drying, a sample of the residue was collected and screened visually and using the olfactory senses. No evidence of any remaining xanthate or any of its degradation products were found. The sample (Sample 120320-1) was then sent to SGS Laboratories in Wheat Ridge, Colorado under chain of custody procedures and tested using the method described in the Braun October 30, 2020 report. The laboratory found no detectable concentrations of target compound ethane in the sample, thus detectable concentrations of xanthate. Since no xanthate remains in the residue, there is no xanthate to dispose of, and all that remains in the residue is rock dust. It is recommended that if the plant should be started up again, this small amount of material merely be added to the process water as this material might still contain some economic product that can be recovered. Alternatively, if the plant is not restarted, the small amount of material could either be placed in with tailings sand or the concentrates. The SGS laboratory report for that sample is attached.

Comment 3

The TR-01 application proposes to transport floatation concentrates off-site and out of state for further metallurgical testing. Please provide an estimated amount of the floatation concentrate that is currently on site. Please provide details on how the floatation concentrates will be handled and transported to ensure there are no unauthorized releases to the environment. Please commit to providing appropriate documentation demonstrating the testing facility received the floatation concentrates.

Response:

No flotation concentrate remains on site. As there appeared to be an urgency in the Board's order to prioritize for environmental and human safety, the flotation concentrates were promptly hauled to the receiving company for safe keeping and testing. If the material were to remain on site, it would be stored in suitable containers that are compatible and designed so that no concentrate could reach soils. The containers would be stored in such a way that they are protected from precipitation, again with the goal that no concentrate reaches soils. It is not exactly clear what the reviewer means in his comments concerning handling and transport with regard to unauthorized releases, or even possibly authorized releases. Both CDPHE and the Department of Transportation (DOT) have standards relating to storage and transport of materials. CDPHE encourages operators to store chemicals in a manner consistent with that recommended by the manufacturer, and DOT also relies on manufacturer's containerizing and handling specifications, with certain expectations that transporters package and handle materials appropriately to minimize the probability of any releases. Unplanned releases that occur on the highways are, at the very least, disruptive to traffic flow. Mr. Barker's past on-site storage methods have produced no releases to the environment, nor have any authorized or unauthorized releases occurred during transport to the testing company. If the reviewer has some specific transportation and container expertise which might be helpful, that insight is always welcomed.

Comment 4

> **The TR-01 application proposes to sample and test the mill tailings for RCRA Metals, Volatiles, Semi Volatiles, and Xanthate. The TR-01 application stated that once the material has been characterized, a plan will be put together to properly handle this material. On November 2, 2020, the Operator provided to the Division, a Mineral Mountain Xanthate-Tailings Investigation document completed by Braun Environmental, Inc. which included the sampling results of the mill tailings. The Operator did not provide a plan to handle the mill tailings with the submitted characterization report. Please provide the proposed plan to handle the tailings.**

Response:

The characteristics of the current tailings are well known, but while the general composition of future tailings are known, there are some remaining details that need to be worked out. While testing and processing might seem simple to a regulator, we find that in practice, it is not always quite so simple. As was thoroughly discussed during various meetings, Mr. Barker was in the process of conducting

metallurgical testing last summer, and until his testing is resumed and completed, the final characteristics of his concentrates and tailings sand cannot be known. Both the consultant and the State should encourage Mr. Barker to continue his testing so that he can optimize the process and produce an ultimate tailing sand that maximizes his recovery of metals, while minimizing the amount that might remain in the tailings sand.

At this point, we know that the tailings sand that has been produced to date is not acid generating, that it contains no concentrations of RCRA metals that exceed any State or Federal environmental standards, nor does it contain any detectable concentrations of the non-hazardous chemical xanthate. The materials does contain elevated arsenic concentrations as compared to Colorado residential human safety standards. However, testing of background soil samples from the site has found them to contain arsenic concentrations at levels nearly double the concentrations found in the tailings sand.

Placement of the tailings sand to date has produced no negative environmental effects, and per EPA and CDPHE standards, the material requires no covering, or any other special considerations. Thus, based on this criteria, the material may be left where it is and as is. When the elevated arsenic values are considered, CDPHE requires that a reclamation cover to be installed so they can be isolated from human contact upon the change in land use following completion of mining. However, laboratory testing has found the arsenic concentrations of the soils at this site contain substantially higher concentrations of arsenic than the tailings sand, and thus those soils pose the greater potential risk to human health than the sand. Covering the tailings sand with a soil containing higher arsenic concentrations produces no improvement or benefit to human safety. However from a practical perspective, it is still recommended that the material be covered to keep it in place and isolated from potential wind and water erosion. Since the material is already located within the active waste pile area, it is recommended that itl simply be incorporated into the waste rock pile and covered by adjacent waste rock. It should also be considered that the tailings sand volume is quite small as compared to the waste rock volume, thus, this solution can effectively isolate it from any future public. This method will be the simplest, will be the most effective, and will have the least impact on the environment.

It is reasonable to expect that additional tailings sand will be produced in the future. Using the information that has been collected to date on the rock and present tailings, the future tailings can be expected to also be non-acid producing, meet EPA RCRA standards, and contain no residual

concentrations of xanthate. However, the final concentrations of arsenic are not known. If Mr. Barker is successful in getting his processing methods perfected, he might be able to substantially reduce the concentrations of arsenic in the tailings sand. If this occurs, it is possible the material can be used beneficially as an additive to improve existing soils, or even a growth media and partial replacement for topsoil in areas where quality topsoil might be scarce. A tailings handling plan is included as a separate document and can be found as Attachment A.

Comment 5

> **The RCRA Metals testing results show the mill tailings contain an arsenic concentration of 177 mg/kg, an exceedance of the CDPHE Residential Soil Standard of 0.39 mg/kg. The Mineral Mountain Xanthate- Tailings Investigation document states that, "it is commonly known that elevated arsenic concentrations in Colorado are associated with hydrothermal activity and while the State has developed standards, normal arsenic background values in Colorado can be well above those set standards." The Mineral Mountain Xanthate-Tailings Investigation document also contains a quote to a CDPHE footnote regarding the CDPHE published standards for soils and drinking water naturally occurring arsenic concentrations which states, "If adequate background sampling is available that confirms the naturally occurring background concentration of arsenic adjacent to a facility is higher than the table value, the background concentration may be used for site screening and remediation purposes." Please provide the adequate background sampling which confirms soils adjacent to the permit have a similar exceedance of the set standard or provide the results of new samples which demonstrates arsenic concentrations of the adjacent undisturbed soils are comparable to the sampled mill tailings.**

Response:

The October 30, 2020 report stated that arsenic levels in Colorado are normally elevated as compared to the CDPHE standards, and the reviewer asked for more than proof from published information. To comply with the order, two background surface samples were collected from the site and submitted to ACZ Laboratories, Inc., located in Steamboat Springs, Colorado, for analysis, via standard chain of custody procedures. The laboratory tested the samples for arsenic using EPA Method M6010D ICP and the results are shown in Table 1. The laboratory reported that Sample 102320-3 contained 462 parts per million (ppm) arsenic, and Sample 112320-4 contained 383 ppm arsenic (original ACZ laboratory

results are included). These concentrations found in these two background samples were approximately twice the concentrations reported for the sand-tailings sample (Sample L61266-01) that had been collected in September, 2020 (October 30, 2020 report), showing 177 ppm arsenic. These test results confirm the presence of elevated arsenic concentrations in the mine area. Comparison of the these background concentrations with the concentrations in Mr. Barker's tailings sand suggests that his processing method might be reducing arsenic concentrations to below original concentrations. As a result, his processing might be improving the quality of the environment, by producing a safer and better quality material than exists naturally.

Table 1

Element	Arsenic Concentration (mg/kg)	CDPHE Residential (mg/kg)	CDPHE Worker (mg/kg)
L61266-01	177	0.39	1.60
Sample 112312-3	462	0.39	1.60
Sample 112312-4	383	0.39	1.60

Comment 6

The Mineral Mountain Xanthate-Tailings Investigation document includes and references an August 6, 2014 Engineering Report titled, "Rock Testing for Acid Generation and Rock Buffering." The 2014 Engineering Report includes acid-base accounting (ABA) testing which was performed prior to permit issuance. This 2014 Engineering Report, which ultimately required the Operator to convert to a 110d permit, showed two samples were uncertain for acid-producing potential and the third was potentially acid-producing. As the third sample was a 1-inch wide vein and represented a portion of the target feature of the mine, the mill tailings have the potential to be acid-producing as well. Please provide ABA test results of the mill tailings or propose a plan to appropriately handle and dispose of the tailings.

Response:

This comment suggests that environmental protection specialist lacks familiarity with practical mining methods, and also appears to lack understanding of the results produced from the acid base accounting (ABA) testing. As a result, a brief review of the 2014 report is necessary. The ABA test produces an acid generation value, and an acid neutralization value. The acid generation value, minus the acid neutralization value produces a number of tons of calcium carbonate equivalent necessary to result in

zero acid generation. Calcium carbonate is a well-known standard chemical compound that makes calculations easy. There are other chemical compounds found in nature that also provide acid neutralization, but at different ratios. Table 1, shows Sample 060514-1 to have a pyritic sulfide acid generation potential of 24 tons per kiloton (t/Kt), and an acid neutralization potential of 24 (t/Kt). Using simple math, 24 t/Kt, minus 24 t/Kt equals zero t/Kt. Thus, that the rock is considered acid/base neutral. A person unfamiliar with basic chemical principles might mistakenly include the sulfate sulfur in the calculation and by using it, would reach an incorrect conclusion. However, remembering back to simple high school chemistry, sulfate is not acid generating and nearly every house in town safely stores about a ton of this chemical, with no acid generation nor any other negative effects to its inhabitants.

Sample 060514-2 was chosen to be representative of non-mineralized country rock. It was found to have an acid generation potential of 0.3 t/Kt and had an acid neutralization potential of 13 t/Kt. That calculates out to a neutralization value of 12.7 of tons (rounded to 13 t/Kt in that report) of calcium carbonate equivalent per kiloton of rock, a number that could hardly be considered acid generating. In fact any mine in the world that has acid problems would be happy to have a large supply of this material.

The reviewer's statement regarding Sample 060514-3, that, ***"As the third sample was a 1-inch wide vein and represented a portion of the target feature of the mine . . ."*** is incorrect and simply not true. A 1-inch wide vein is not a "target feature", and this statement most likely represents a lack of technical understanding, since a 1-inch wide vein could not, under any normal circumstances, be considered an economic target. The reviewer is at least correct in his assessment that this particular sample is acid generating. The report does include some discussion concerning this sample, and that discussion indicates that the sample was chosen as more of a specialized sample to help the regulators and the operator understand the geology. It is recommended that the reviewer revisit the report, and more carefully read the discussion. It is also recommended that he also review the rate testing section in the report and specifically review Table 2, as that test can be quite useful to predict reaction rates.

As an abbreviated review of the report, Sample 060514-1 was specifically chosen to represent the non-mineralized underground country rock. Sample 060514-2 was specifically chosen to characterize the rock that was anticipated to be mined and processed. From the two samples, it is easy to see that the country rock is highly acid neutralizing, and after it has been altered by mineralizing fluids, it becomes

approximately acid neutral. These results could have been easily predicted, and if someone were to drive around the district, the reason that there is a lack of acid mine drainage would become obvious.

Per the DRMS order, two samples were collected and were sent to ACZ Laboratories, Inc., located in Steamboat Springs, Colorado, via standard chain of custody procedures, for analysis. ACZ Laboratories tested each of the samples for total sulfur, pyritic sulfur, and for sulfate sulfur. Acid generation potential (AGP) was determined using EPA Method M600/2-78-54-054-3.2.4, acid neutralization potential (ANP) was determined using EPA Method M66/2-78-054 1.3, and the acid base potential (ABP) result was reached using EPA Method M66/2-78-054 1.3.

Sample 112320-1 was collected from the tailings sand from the trench area. The laboratory found the sample to contain 0.42 percent pyritic sulfur and 0.17 percent sulfate sulfur. The total sulfur produces a total acid generating potential of 18.4t/Kt, but subtraction of the sulfate sulfur leaves an actual acid generating potential of 13.1 t/Kt. Subtraction from the neutralizing capacity of 17 t/Kt, results in a net neutralizing capacity of 3.9 tons of calcium carbonate equivalent per kiloton of rock. This value is reasonable, since a portion of the pyritic sulfur that was originally contained in Sample 060514-1 was removed during the treatment process.

To test the other side of the equation, a second sample was collected from the concentrate. That sample (Sample 112320-2) was found to contain 0.88 percent pyritic sulfur and 0.23 percent sulfate sulfur. The total sulfur produces a total acid generating potential of 35.0t/Kt, and subtraction of the sulfate sulfur leaves an actual acid generating potential of 27.5t/Kt. When a neutralizing potential of 19.0 t/Kt is considered, the material has a net acid generating capacity equivalent to 8.5 tons of calcium carbonate per kiloton of concentrate. This value is once again reasonable as the intent of the treatment is to increase the concentration of metals, including iron, which is part of the pyritic sulfur. Since this material is an economic product, it will not be disposed of, but instead will be sold, hopefully at a profit. In the event that it were to be disposed of, by simply recombining it with the material represented by Sample 122320-1, it would have the same composition of Sample 060514-1, a rock that was not originally acid generating.

In conclusion, the new acid based accounting data collected in 2020 remains consistent with the data that was collected in 2014. The country rock is still strongly acid neutralizing, and the material that is to

be processed is approximately acid neutral. Acid neutral rock, combined with strong acid neutralizing rock produces acid neutralizing rock. In the event that some of the economic rock might be found that would be slightly acid generating, it would still be automatically neutralized when it was combined with the highly neutralizing country rock. By mining the mineralized potentially economic rock, and processing it, Mr. Barker has actually reduced the amount of pyritic sulfur, and his tailings sand actually results in an improvement to the environment with respect to the potential of acid generation.

Attachment A

Plan to Handle Tailings
In responses to Comment 4
Mineral Mountain Project Permit M-2014-045
C. A. Braun – February 10, 2021

In accordance with federal law and per EPA agreement by the State of Colorado CDPHE regulations, "mining overburden returned to the mine site" is not a hazardous waste 161.4(b)(3), nor are the products from the extraction, beneficiation and processing of ores hazardous waste. Addition of any non-hazardous compounds to those products would not cause them to become hazardous and non-hazardous materials require no special treatment or handling.

The newly collected data on the tailings sand has confirmed it to be non- acid generating, that it contains no concentrations of RCRA metals that exceed any State or Federal environmental standards, nor does it contain any detectable concentrations of the non-hazardous chemical xanthate. The material does contain elevated arsenic concentrations as compared to Colorado residential human safety standards, but testing of background soil samples from the site has found them to also contain arsenic, and the levels in the soils are at concentrations nearly double the concentrations found in the tailings sand. Thus, based on the arsenic values in the soils, they appear to pose a greater potential risk to human health than the tailings sand. Covering the tailings sand with a soil containing higher arsenic concentrations produces no improvement or benefit to human safety.

Current Tailings

Although covering the tailings sand, offers no benefit for the above discussed parameters, the material should be covered to keep it in place and isolated from potential wind and water erosion. Since the material is currently located within the active waste pile area, the material should be simply incorporated into the waste rock pile and covered using the adjacent waste rock. The volume of tailings sand is quite small as compared to the waste rock volume, thus this method will effectively isolate it from any future public. This method will be the simplest, will be the most effective, and will have the least impact on the environment.

Future Tailings

It is reasonable to expect that additional dry tailings sand will be produced in the future. Using the information that has been collected to date, the future tailings can be expected to also be non-acid producing, meet EPA RCRA standards, and contain no residual concentrations of xanthate. However, the final concentrations of arsenic that might be contained in them is still not known. If Mr. Barker is successful in getting his processing methods perfected, he might be able to substantially reduce the concentrations of arsenic in the tailings sand. If this occurs, it is possible the material can be used beneficially as an additive for improving existing soils, or even as a growth media and partial replacement for topsoil in areas where quality topsoil might be scarce. Testing for remnant arsenic concentrations will need to be performed prior to using it for this purpose.

If growth media is needed, then the material should be stockpiled in preparation for eventual mine closure, and conversion of the surface to other uses. If the material is not needed for this purpose, it should be incorporated into the waste rock pile in the same manner as the existing tailings sand.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

January 22, 2021

Report to:
Art Braun
Braun Environmental, Inc.
355 S Teller St.
Suite 200
Lakewood, CO 80226

Bill to:
Art Braun
Braun Environmental, Inc.
355 S Teller St.
Suite 200
Lakewood, CO 80226

Project ID: MH-01
ACZ Project ID: L63188

Art Braun:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on December 07, 2020. This project has been assigned to ACZ's project number, L63188. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L63188. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after February 21, 2021. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Max Janicek has reviewed and approved this report.

Braun Environmental, Inc. January 22, 2021

Project ID: MH-01
ACZ Project ID: L63188

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 4 miscellaneous samples from Braun Environmental, Inc. on December 7, 2020. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L63188. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

The below is from WG513137
Qualifier: R1
Applies to:
L63188-01/SULFUR PYRITIC SULFIDE
L63188-01/SULFUR SULFATE
L63188-02/SULFUR PYRITIC SULFIDE
L63188-02/SULFUR SULFATE

RPD out of range for for pyritic and sulfate sulfur. These values are calculations derived from samples and their duplicates which have passing RPD's

Braun Environmental, Inc.
Project ID: MH-01
Sample ID: 112320-1

ACZ Sample ID: ***L63188-01***
Date Sampled: *11/23/20 14:15*
Date Received: *12/07/20*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		18.4			t CaCO3/Kt	0.31	3.1	01/22/21 0:00	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		17.0			t CaCO3/Kt	1	5	01/22/21 0:00	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-1.4			t CaCO3/Kt			01/22/21 0:00	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3	1	1.7		*	%	0.1	0.5	01/14/21 19:58	jms
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.42		*	%	0.01	0.1	01/12/21 0:00	cra
Sulfur HNO3 Residue		1	<0.01	U	*	%	0.01	0.1	01/12/21 0:00	cra
Sulfur Organic Residual		1	<0.01	U	*	%	0.01	0.1	01/12/21 0:00	cra
Sulfur Pyritic Sulfide		1	0.42		*	%	0.01	0.1	01/12/21 0:00	cra
Sulfur Sulfate		1	0.17		*	%	0.01	0.1	01/12/21 0:00	cra
Sulfur Total		1	0.59		*	%	0.01	0.1	01/12/21 0:00	cra
Total Sulfur minus Sulfate		1	0.42		*	%	0.01	0.1	01/12/21 0:00	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees	USDA No. 1, 1972								12/08/20 14:07	krs
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3								12/09/20 9:10	krs

Braun Environmental, Inc.
Project ID: MH-01
Sample ID: 112320-2

ACZ Sample ID: ***L63188-02***
Date Sampled: *11/23/20 15:10*
Date Received: *12/07/20*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		35.0			t CaCO3/Kt	0.31	3.1	01/22/21 0:00	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		19.0			t CaCO3/Kt	1	5	01/22/21 0:00	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		-16.0			t CaCO3/Kt			01/22/21 0:00	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3	1	1.9		*	%	0.1	0.5	01/14/21 20:00	jms
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.89		*	%	0.01	0.1	01/12/21 0:00	cra
Sulfur HNO3 Residue		1	0.01	B	*	%	0.01	0.1	01/12/21 0:00	cra
Sulfur Organic Residual		1	0.01	B	*	%	0.01	0.1	01/12/21 0:00	cra
Sulfur Pyritic Sulfide		1	0.88		*	%	0.01	0.1	01/12/21 0:00	cra
Sulfur Sulfate		1	0.23		*	%	0.01	0.1	01/12/21 0:00	cra
Sulfur Total		1	1.12		*	%	0.01	0.1	01/12/21 0:00	cra
Total Sulfur minus Sulfate		1	0.89		*	%	0.01	0.1	01/12/21 0:00	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees	USDA No. 1, 1972								12/08/20 14:11	krs
Crush and Pulverize (Ring & Puck)	EPA-600/2-78-054 3.1.3								12/09/20 16:45	krs

Braun Environmental, Inc.
Project ID: MH-01
Sample ID: 112320-3

ACZ Sample ID: ***L63188-03***
Date Sampled: *11/23/20 16:12*
Date Received: *12/07/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	105	462		*	mg/Kg	4.2	21	12/10/20 22:48	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	89.8		*	%	0.1	0.5	12/09/20 11:52	krs

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees	USDA No. 1, 1972								12/08/20 14:15	krs
Digestion - Hot Plate	M3050B ICP								12/09/20 19:42	krs
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								12/09/20 12:20	krs

Braun Environmental, Inc.
Project ID: MH-01
Sample ID: 112320-4

ACZ Sample ID: ***L63188-04***
Date Sampled: *11/23/20 16:27*
Date Received: *12/07/20*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010D ICP	101	383		*	mg/Kg	4.04	20.2	12/10/20 22:52	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	97.4		*	%	0.1	0.5	12/09/20 13:00	krs

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees	USDA No. 1, 1972								12/08/20 14:19	krs
Digestion - Hot Plate	M3050B ICP								12/09/20 19:59	krs
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								12/09/20 12:30	krs

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

Braun Environmental, Inc. ACZ Project ID: ***L63188***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Arsenic, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG511093													
WG511093ICV	ICV	12/10/20 20:52	II201201-1	4		3.858	mg/L	96	90	110			
WG511093ICB	ICB	12/10/20 20:56				U	mg/L		-0.12	0.12			
WG510967PBS	PBS	12/10/20 21:19				U	mg/Kg		-12	12			
WG510967LCSS	LCSS	12/10/20 21:23	PCN62459	162		146.8	mg/Kg		134	191			
WG510967LCSSD	LCSSD	12/10/20 21:27	PCN62459	162		142.2	mg/Kg		134	191	3	20	
L63125-01MS	MS	12/10/20 21:34	II201123-3	101.0808	61.3	96.233	mg/Kg	35	75	125			M2
L63125-01MSD	MSD	12/10/20 21:37	II201123-3	100.08	61.3	98.3	mg/Kg	37	75	125	2	20	M2

Neutralization Potential as CaCO3 M600/2-78-054 3.2.3

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG512851													
WG512851PBS	PBS	01/14/21 19:38				U	%		-0.2	0.2			
WG512851LCSS	LCSS	01/14/21 19:40	PCN59475	99.9		97	%	97	80	120			
L63070-37MS	MS	01/14/21 19:44	SI190303-1	1	1.1	2.2	%	110	70	130			
L63070-37DUP	DUP	01/14/21 19:46			1.1	1.1	%				0	20	

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG510909													
WG510909PBS	PBS	12/08/20 14:30				U	%		-0.1	0.1			
L63183-01DUP	DUP	12/08/20 16:45			94.1	94.3	%				0	20	

Sulfur Organic Residual M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG513137													
WG513137PBS	PBS	01/12/21 15:00				U	%		-0.03	0.03			
L63335-01DUP	DUP	01/12/21 15:00			.06	.05	%				18	20	RA

Sulfur Pyritic Sulfide M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG513137													
L63335-01DUP	DUP	01/12/21 15:00			.22	.28	%				24	20	R1
WG513137PBS	PBS	01/12/21 15:00				U	%		-0.03	0.03			

Sulfur Sulfate M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG513137													
L63335-01DUP	DUP	01/12/21 15:00			.29	.18	%				47	20	R1
WG513137PBS	PBS	01/12/21 15:00				U	%		-0.03	0.03			

Sulfur Total M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG513137													
L63335-01DUP	DUP	01/12/21 15:00			.57	.51	%				11	20	
L63335-02MS	MS	01/12/21 15:00	PCN62542	1.3	.72	1.88	%	89	80	120			
WG513137LCSS	LCSS	01/12/21 15:00	PCN62620	4.01		3.5	%	87	80	120			
WG513137PBS	PBS	01/12/21 15:00				U	%		-0.03	0.03			

Braun Environmental, Inc.

ACZ Project ID: ***L63188***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Total Sulfur Minus Sulfate M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG513137													
WG513137PBS	PBS	01/12/21 15:00				U	%		-0.03	0.03			
L63335-01DUP	DUP	01/12/21 15:00			.28	.33	%				16	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Braun Environmental, Inc.

ACZ Project ID: ***L63188***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L63188-01	*N*G513137	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	R1	RPD exceeded the method or laboratory acceptance limit. See Case Narrative.
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	R1	RPD exceeded the method or laboratory acceptance limit. See Case Narrative.
L63188-02	*N*G513137	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD	R1	RPD exceeded the method or laboratory acceptance limit. See Case Narrative.
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	R1	RPD exceeded the method or laboratory acceptance limit. See Case Narrative.
L63188-03	*N*G511093	Arsenic, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L63188-04	*N*G511093	Arsenic, total (3050)	M6010D ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

Braun Environmental, Inc. ACZ Project ID: ***L63188***

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Neutralization Potential as CaCO3	M600/2-78-054 3.2.3
Solids, Percent	D2216-80
Sulfur HCl Residue	M600/2-78-054 3.2.4-MOD
Sulfur HNO3 Residue	M600/2-78-054 3.2.4-MOD
Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD
Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD
Sulfur Sulfate	M600/2-78-054 3.2.4-MOD
Sulfur Total	M600/2-78-054 3.2.4-MOD
Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Braun Environmental, Inc.
MH-01

ACZ Project ID: L63188
Date Received: 12/07/2020 15:54
Received By:
Date Printed: 12/8/2020

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?		X	
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
NA34209	19.1	NA	17	N/A

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Braun Environmental, Inc.
MH-01

ACZ Project ID: L63188
Date Received: 12/07/2020 15:54
Received By:
Date Printed: 12/8/2020

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L63188

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Art Braun	Address: 355 S. Teller St., Suite 200
Company: Braun Environmental, Inc.	Lakewood, Colorado 80226
E-mail: braunenv@msn.com	Telephone: 303-988-7697

Copy of Report to:

Name: NA	E-mail: NA
Company: NA	Telephone: NA

Invoice to:

Name: Art Braun	Address: As above
Company: Braun Environmental, Inc.	
E-mail: braunenv@msn.com	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☒

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: A. Braun Sampler's Site Information State CO Zip code 80813 Time Zone M

*Sampler's Signature: A Braun

*I attest to the authenticity and validity of this sample. I understand that mislabeling the time/date/location, or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: CC-ABA - Analysis per Quote

PO#: MH-01

Reporting state for compliance testing: NA

Check box if samples include NRC licensed material? ☐

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	CC-ABA	ICP - Arsenic						
112320-1	11/23/20:2:15pm	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
112320-2	11/23/20:3:10pm	SO	1	☒	☐	☐	☐	☐	☐	☐	☐
112320-3	11/23/20:4:12pm	SO	1	☐	☒	☐	☐	☐	☐	☐	☐
112320-4	11/23/20:4:27pm	SO	1	☐	☒	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐
				☐	☐	☐	☐	☐	☐	☐	☐

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

I have assumed that For samples 3 and 4 will be tested using ICP, but following discussion, may chose

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	12/4/20 10:01A	USPO	
		[signature] 12/7/20	15:54

FRMAD050.03.14.13 White - Return with sample. Yellow - Retain for your records.

L63188 Chain of Custod

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Braun Environmental, Inc.

MM-01

SGS Job Number: DA30985

Sampling Date: 12/03/20

Report to:

Braun Environmental, Inc.
355 South Teller Street Suite 200
Lakewood, CO 80226
braunenv@msn.com

ATTN: Art Braun

Total number of pages in report: 25

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Jason Savoie
General Manager

Client Service contact: Elizabeth Sutcliffe 303-425-6021

Certifications: CO (CO00049), NE (NE-OS-06-04), ND (R-027), UT (NELAP CO00049) LA (LA150028), TX (T104704511), WY (8TMS-L)

Sections: 1 2 3 4 5 6 7

Table of Contents

SGS North America Inc.

Sample Summary

Braun Environmental, Inc.

Job No: DA30985

MM-01

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
DA30985-1	12/03/20	15:14	AB	12/04/20	AQ	Water	120320-1

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Braun Environmental, Inc.	**Job No:**	DA30985
Site:	Braun non-OPS RCG	**Report Date**	12/14/2020 11:54:02 A

On 12/04/2020, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 1.3 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of DA30985 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

GC Volatiles By Method RSK175 MOD

Matrix: AQ **Batch ID:** GFK136

- All samples were analyzed within the recommended method holding time.
- Sample(s) DA19473-4MS, DA19473-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- DA30985-1: Sample was not preserved to a pH < 2.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

Summary of Hits

Job Number: DA30985
Account: Braun Environmental, Inc.
Project: MM-01
Collected: 12/03/20

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
DA30985-1	**120320-1**					

No hits reported in this sample.

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Client Sample ID:	120320-1		
Lab Sample ID:	DA30985-1	**Date Sampled:**	12/03/20
Matrix:	AQ - Water	**Date Received:**	12/04/20
Method:	RSK175 MOD	**Percent Solids:**	n/a
Project:	MM-01		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	FK2036.D	1	12/08/20 14:27	JB	n/a	n/a	GFK136
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	39.0 ml	4.0 ml	500 ul	21.4 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-84-0	Ethane	ND	0.0016	0.0010	mg/l	

(a) Sample was not preserved to a pH < 2.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS North America Inc. - Wheat Ridge
4036 Youngfield Street, Wheat Ridge, CO 80033
TEL: 303-425-6021 FAX: 303-425-6854
www.sgs.com/ehsusa

Bottle Order Control #: | FED-EX Tracking #:
SGS Quote #: | SGS Job #: DA30985

Client / Reporting Information

Company: Brown Environmental Inc
Street: 3555 Tellu St, Ste 200
City, State: Lakewood CO 80226
Project Contact: Art Brown
Phone: 303-988-7697
Email: brownenv@msn.com
Sampler(s) Name(s):

Project Information

Project Name:
Street:
City, State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (If different from Report to)

Company:
Street Address:
City, State ZIP:
Attention:

Requested Analysis (see TEST CODE sheet)

Field ID / Point of Collection	Collection: Date	Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: NONE	HCl	NaOH	HNO3	H2SO4	DI Water	MEOH	ENCORE	Na2S2O3	NaZSO3	RSK-175 Method - Ethane	LAB USE ONLY
120320-1	12/3/20	3:14P	AB	W	3											X	01
																	02
																	12/4/20

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

Turnaround Time (Business days)

- [X] Standard 10 Business Days
- [ ] 5 Business Days RUSH
- [ ] 3 Business Days RUSH
- [ ] 2 Business Days RUSH
- [ ] 1 Business Day EMERGENC

Special Reporting Instructions
- [ ] Report In PPB
- [ ] Report In PPM
- [ ] Report MDLs

Emergency & Rush T/A data available via LabLink. RUSH TAT approval needed.

Data Deliverable Information

- [ ] Commercial "A" (Level 1, Results Only)
- [ ] Commercial "B" (Level 2, Results + QC Summary)
- [ ] COMMBN (Results/QC/Narrative)
- [ ] COMMBN+ [Results/QC/Narrative (+ chromatograms)]
- [ ] REDT2
- [ ] FULT1
- [ ] EDD Format _____

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date/Time: 12/4/2020 10:50	Received By: 2	Relinquished By: 2	Date/Time:	Received By: 2
Relinquished by Sampler: 3	Date/Time:	Received By: 3	Relinquished By: 4	Date/Time:	Received By: 4

Custody Seal # | Intact [ ] | Not Intact [ ] | Absent [ ]
Preserved where applicable [ ] | Cooler Temp. °C: 1.5 | Therm. ID: 7810 | On Ice [X]

http://www.sgs.com/en/terms-and-conditions

EHSA-QAC-0027.00 FORM Wheat Ridge - DW COC Rev Date: 4/16/19

DA30985: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: DA30985 **Client:** BRAUN ENVIRONMENTAL **Project:**

Date / Time Received: 12/4/2020 10:50:00 AM **Delivery Method:** **Airbill #'s:** HD

Cooler Temps (Initial/Adjusted): #1: (1.3/1.3);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun;		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Comments

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

GC Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: DA30985
Account: BRAECOL Braun Environmental, Inc.
Project: MM-01

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFK136-MB	FK2026.D	1	12/08/20	JB	n/a	n/a	GFK136

The QC reported here applies to the following samples: **Method:** RSK175 MOD

DA30985-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-84-0	Ethane	ND	0.0016	0.0010	mg/l	

Blank Spike Summary

Job Number: DA30985
Account: BRAECOL Braun Environmental, Inc.
Project: MM-01

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFK136-BS	FK2025.D	10	12/08/20	JB	n/a	n/a	GFK136

The QC reported here applies to the following samples: **Method:** RSK175 MOD

DA30985-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
74-84-0	Ethane	0.923	1.09	118	70-142

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA30985
Account: BRAECOL Braun Environmental, Inc.
Project: MM-01

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA19473-4MS	FK2028.D	10	12/08/20	JB	n/a	n/a	GFK136
DA19473-4MSD	FK2029.D	10	12/08/20	JB	n/a	n/a	GFK136
DA19473-4	FK2027.D	1	12/08/20	JB	n/a	n/a	GFK136

The QC reported here applies to the following samples: **Method:** RSK175 MOD

DA30985-1

CAS No.	Compound	DA19473-4 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
74-84-0	Ethane	ND		0.923	1.16	126	0.923	1.06	115	9	64-147/30

* = Outside of Control Limits.

GC Volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Martin Brown 12/10/20 12:19

Quantitation Report (QT Reviewed)

Data File : C:\SHARED\FK\2020\12.2020\120820\FK2036.D Vial: 14
Acq On : 12-8-2020 02:27:56 PM Operator: JAMILB
Sample : da30985-1, 1x Inst : FID10
Misc : GC8911,GFK136,39,21.4,500,4,1 Multiplr: 1.00
IntFile : AUTOINT1.E
Quant Time: Dec 08 15:14:02 2020 Quant Results File: GFK53.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFK53.M (Chemstation Integrator)
Title : RSK 175 Methane, Ethene, Ethane, and Propane
Last Update : Tue Nov 19 10:51:10 2019
Response via : Initial Calibration
DataAcq Meth : GAS.M

Volume Inj. : 100ul
Signal Phase : Porapak Q 80/100
Signal Info : 1/8 in

	Compound	R.T.	Response	Conc	Units
	Target Compounds				
1)	Methane	0.44f	736585	2.473	rawvpm
2)	Ethene	0.00	0	N.D.	rawvp
3)	Ethane	0.00	0	N.D.	rawvp
4)	Propane	0.00	0	N.D.	rawvp
5)	n-Butane	0.00	0	N.D.	ppmv

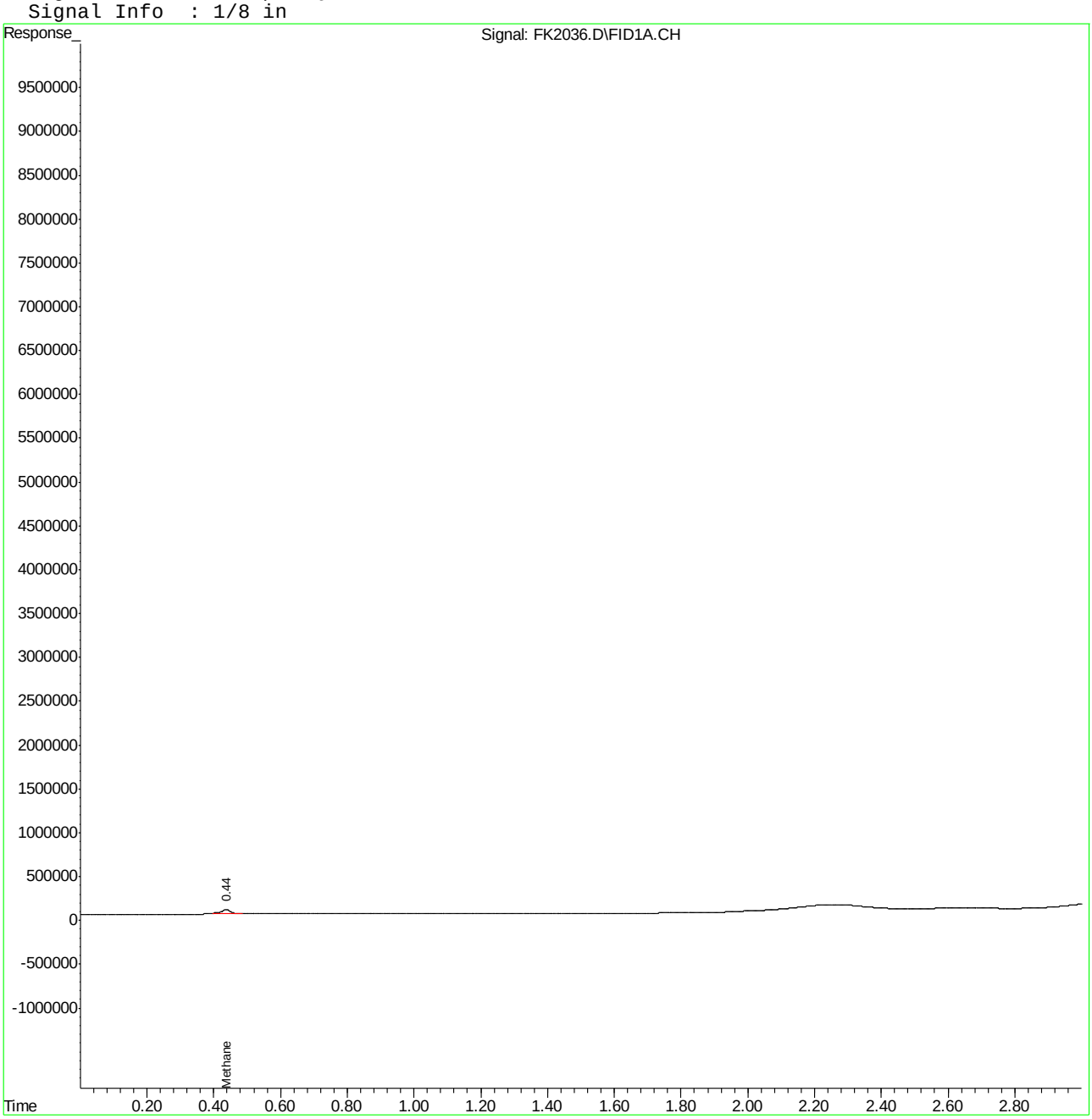
(f)=RT Delta > 1/2 Window (m)=manual int.
FK2036.D GFK53.M Tue Dec 08 15:24:24 2020 GCFA Page 1

Quantitation Report (QT Reviewed)

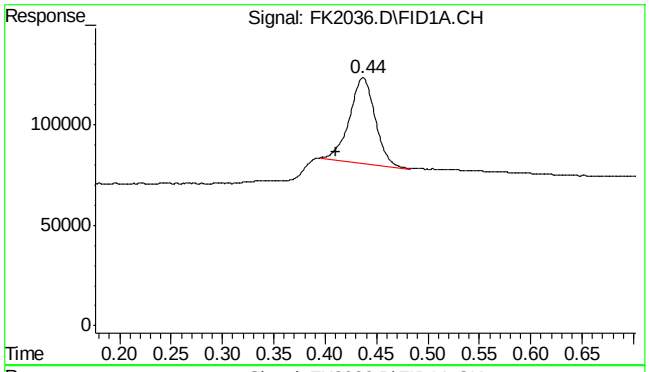
Data File : C:\SHARED\FK\2020\12.2020\120820\FK2036.D Vial: 14
Acq On : 12-8-2020 02:27:56 PM Operator: JAMILB
Sample : da30985-1, 1x Inst : FID10
Misc : GC8911,GFK136,39,21.4,500,4,1 Multiplr: 1.00
IntFile : AUTOINT1.E
Quant Time: Dec 8 15:21 2020 Quant Results File: GFK53.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFK53.M (Chemstation Integrator)
Title : RSK 175 Methane, Ethene, Ethane, and Propane
Last Update : Tue Nov 19 10:51:10 2019
Response via : Multiple Level Calibration
DataAcq Meth : GAS.M

Volume Inj. : 100ul
Signal Phase : Porapak Q 80/100
Signal Info : 1/8 in

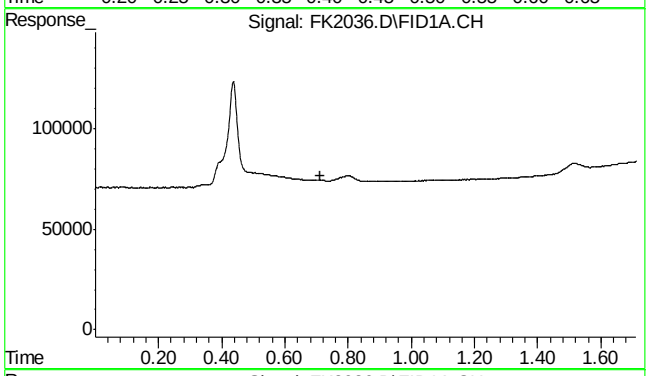


FK2036.D GFK53.M Tue Dec 08 15:24:24 2020 GCFA Page 2



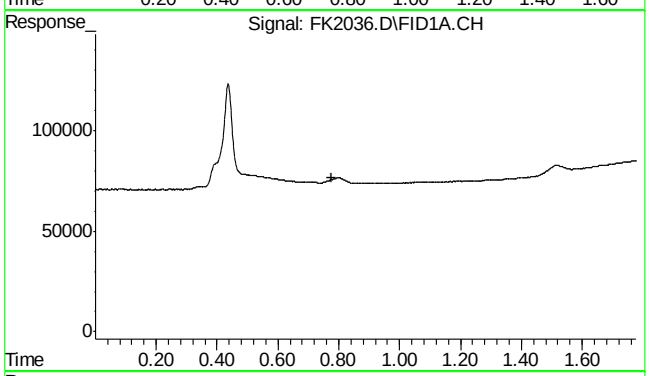
#1 Methane

R.T.: 0.437 min
Delta R.T.: 0.026 min
Response: 736585
Conc: 2.47 rawvppm m



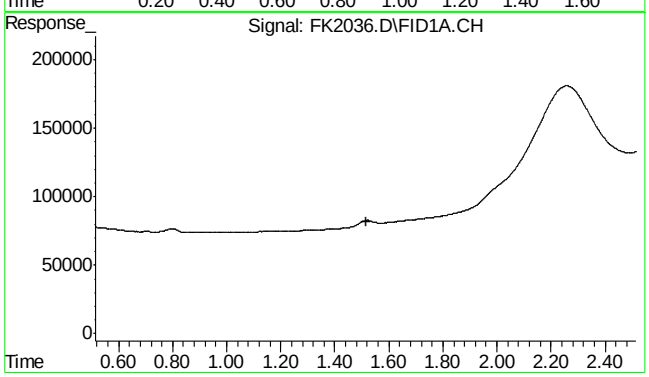
#2 Ethene

R.T.: 0.000 min
Exp R.T. : 0.711 min
Response: 0
Conc: N.D.



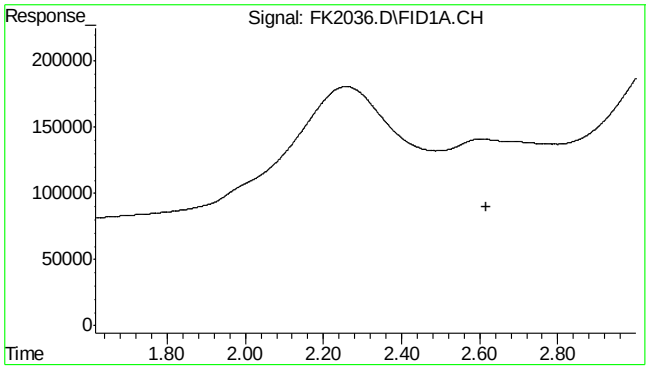
#3 Ethane

R.T.: 0.000 min
Exp R.T. : 0.777 min
Response: 0
Conc: N.D.



#4 Propane

R.T.: 0.000 min
Exp R.T. : 1.515 min
Response: 0
Conc: N.D.



#5 n-Butane

R.T.: 0.000 min
Exp R.T. : 2.616 min
Response: 0
Conc: N.D.

Dissolved Gases Raw Data Summary

Sample Number:	DA30985-1	**Sample Volume:**	39.0 ml
Lab FileID:	FK2036.D	**Headspace:**	4.0 ml
Injection Time:	12/08/20 14:27	**Volume Injected:**	500 ul
Method:	RSK175 MOD	**Temperature:**	21.4 Deg. C

Parameter	CAS	MW	Result (ppmv)	Henry's Constant	Total	Units
Methane	74-82-8	16	2.47	38340	0.0	mg/l
Ethane	74-84-0	30	0	27080	0.0	mg/l
Ethene	74-85-1	28	0	10440	0.0	mg/l
Propane	74-98-6	44	0	32552	0.0	mg/l

Henry's Constants	17	18	19	20	21	22	23	24	25	26	27
Methane	35290	36060	36830	37600	38340	39080	39820	40560	41300	42020	42740
Ethane	24020	24780	25540	26300	27080	27860	28640	29420	30200	31000	31800
Ethene	9480	9720	9960	10200	10440	10680	10920	11160	11400	11660	11920
Propane	28308	29352	30408	31474	32552	33643	34744	35857	36978	38107	39244

Manual Integrations APPROVED (compounds with "m" flag)
Martin Brown 12/10/20 12:19

Quantitation Report (QT Reviewed)

Data File : C:\SHARED\FK\2020\12.2020\120820\FK2026.D Vial: 4
Acq On : 12-8-2020 01:15:34 PM Operator: JAMILB
Sample : mb Inst : FID10
Misc : GC8911,GFK136,39,21.4,500,4,1 Multiplr: 1.00
IntFile : AUTOINT1.E
Quant Time: Dec 08 15:13:52 2020 Quant Results File: GFK53.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFK53.M (Chemstation Integrator)
Title : RSK 175 Methane, Ethene, Ethane, and Propane
Last Update : Tue Nov 19 10:51:10 2019
Response via : Initial Calibration
DataAcq Meth : GAS.M

Volume Inj. : 100ul
Signal Phase : Porapak Q 80/100
Signal Info : 1/8 in

	Compound	R.T.	Response	Conc	Units
	Target Compounds				
1)	Methane	0.39f	1077862	3.968	rawvpm
2)	Ethene	0.00	0	N.D.	rawvp
3)	Ethane	0.00	0	N.D.	rawvp
4)	Propane	0.00	0	N.D.	rawvp
5)	n-Butane	0.00	0	N.D.	ppmv

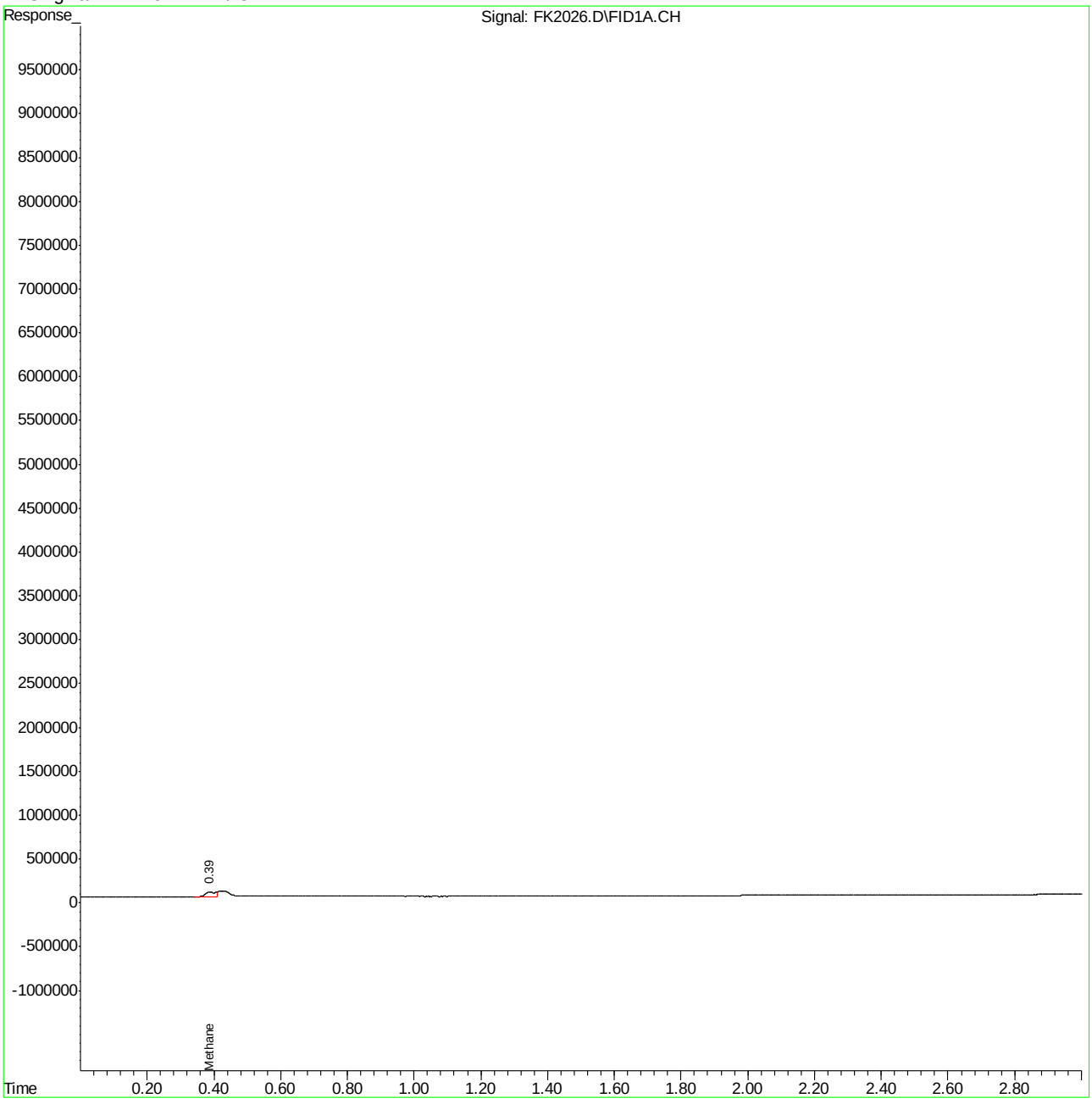
(f)=RT Delta > 1/2 Window (m)=manual int.
FK2026.D GFK53.M Tue Dec 08 15:24:14 2020 GCFA Page 1

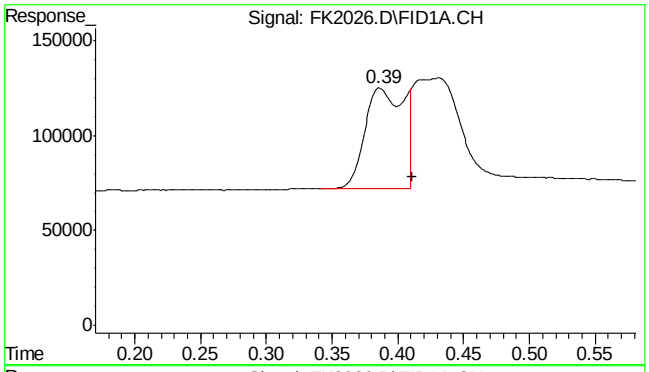
Quantitation Report (QT Reviewed)

Data File : C:\SHARED\FK\2020\12.2020\120820\FK2026.D Vial: 4
Acq On : 12-8-2020 01:15:34 PM Operator: JAMILB
Sample : mb Inst : FID10
Misc : GC8911,GFK136,39,21.4,500,4,1 Multiplr: 1.00
IntFile : AUTOINT1.E
Quant Time: Dec 8 15:18 2020 Quant Results File: GFK53.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFK53.M (Chemstation Integrator)
Title : RSK 175 Methane, Ethene, Ethane, and Propane
Last Update : Tue Nov 19 10:51:10 2019
Response via : Multiple Level Calibration
DataAcq Meth : GAS.M

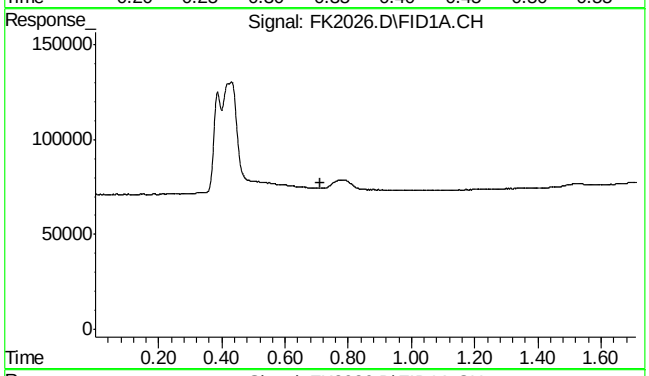
Volume Inj. : 100ul
Signal Phase : Porapak Q 80/100
Signal Info : 1/8 in





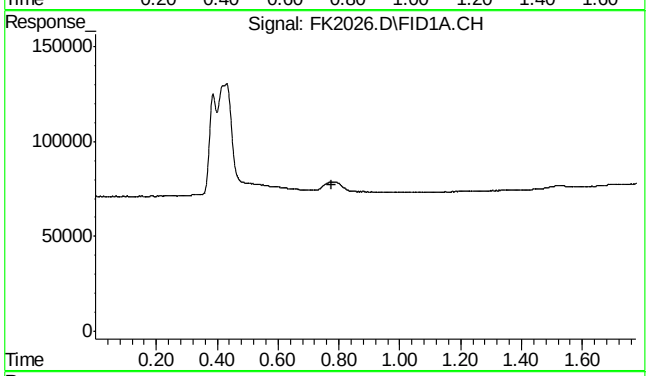
#1 Methane

R.T.:	0.386 min
Delta R.T.:	-0.025 min
Response:	1077862
Conc:	3.97 rawvppm m



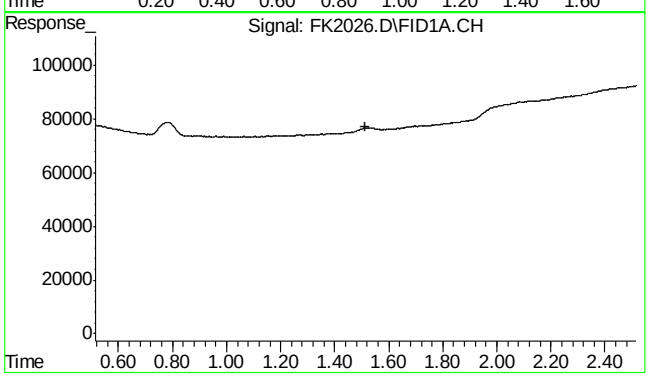
#2 Ethene

R.T.:	0.000 min
Exp R.T. :	0.711 min
Response:	0
Conc:	N.D.



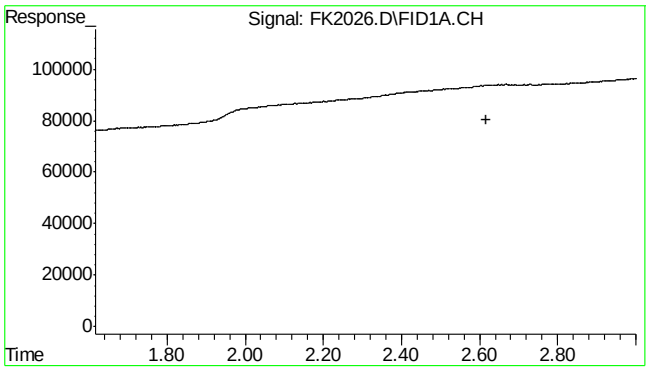
#3 Ethane

R.T.:	0.000 min
Exp R.T. :	0.777 min
Response:	0
Conc:	N.D.



#4 Propane

R.T.:	0.000 min
Exp R.T. :	1.515 min
Response:	0
Conc:	N.D.



#5 n-Butane

R.T.:	0.000 min
Exp R.T. :	2.616 min
Response:	0
Conc:	N.D.

Dissolved Gases Raw Data Summary

Sample Number:	GFK136-MB	**Sample Volume:**	39.0 ml
Lab FileID:	FK2026.D	**Headspace:**	4.0 ml
Injection Time:	12/08/20 13:15	**Volume Injected:**	500 ul
Method:	RSK175 MOD	**Temperature:**	21.4 Deg. C

Parameter	CAS	MW	Result (ppmv)	Henry's Constant	Total	Units
Methane	74-82-8	16	3.97	38340	0.0	mg/l
Ethane	74-84-0	30	0	27080	0.0	mg/l
Ethene	74-85-1	28	0	10440	0.0	mg/l
Propane	74-98-6	44	0	32552	0.0	mg/l

Henry's Constants	17	18	19	20	21	22	23	24	25	26	27
Methane	35290	36060	36830	37600	38340	39080	39820	40560	41300	42020	42740
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Ethene	9480	9720	9960	10200	10440	10680	10920	11160	11400	11660	11920
Propane	28308	29352	30408	31474	32552	33643	34744	35857	36978	38107	39244

STATE OF COLORADO

Russell - DNR, Elliott <elliott.russell@state.co.us>

Response to Adequacy Review, Technical Revision TR-01, Mineral Mountain Project, Permit M-2014-045-Nov 13, 2020

Art Braun <braunenv@msn.com> Fri, Feb 12, 2021 at 12:14 PM
To: elliott.russell@state.co.us
Cc: lbarker@aumining.net

Elliot,

Attached are two documents. The first is a cover letter and the second contains the responses to the comments in your letter dated November 13, 2020. ACZ Laboratories had some problems, and between the Chinese flu and some other issues that came up around Christmas, and it took them longer than normal to get their work finished. However, we are still well ahead of the current deadline, which should give you plenty of time.

Also, as we had discussed, I will plan on starting work on the Amended Permit once the Technical Review has been completed. I think the responses cover everything in your letter and also any items that you and talked about. Be sure to give me a call if you have any questions.

Take Care,

Art

2 attachments

210212 Cover for Response to Nov 13 Comments.pdf
23K

210212 DRMS Response.pdf
856K