EXHIBIT 1

Batson Initial Report

EXPERT REPORT OF DAVID BATSON

Proposed Cost Allocation Methodology for Parties Associated with the Anaconda Aluminum Co. Columbia Falls Reduction Plant Superfund Site

Prepared for:

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EXPERT REPORT

Cost Allocation between Columbia Falls Aluminum Company and Atlantic Richfield Company Regarding Remedial Costs Associated with the Anaconda Aluminum Company Columbia Falls Reduction Plant Superfund Site

David C. Batson, Esq.

February 14, 2020

I. INTRODUCTION

I have been retained by Plaintiff in the matter of *Columbia Falls Aluminum Company v. Atlantic Richfield Company,* to provide an expert opinion about the allocation of reasonable shares of past and future removal (including investigation) and remedial costs for Parties associated with the Anaconda Aluminum Company Columbia Falls Reduction Plant Superfund Site (the Site) near Columbia Falls, Montana. Plaintiff Columbia Falls Aluminum Company ("CFAC") alleges it has incurred and will incur substantial costs associated with remediation of the Site required by the U.S. Environmental Protection Agency ("USEPA" or "EPA") and seeks cost recovery and contribution from the Atlantic Richfield Company ("ARCO") under the federal Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), and the Montana Comprehensive Environmental Cleanup and Responsibility Act, Montana Code Annotated §§75-10-701 *et seq.* ("CECRA").

A. Qualifications and Experience

I am an attorney, environmental allocator and mediator, and have used these disciplines for the past forty years as a practitioner in the field of environmental law and alternative dispute resolution ("ADR"). For the past 30 years, I have maintained a practice, first at EPA and then in the private sector, dedicated to supporting potentially responsible parties ("PRPs") and PRP Groups design and develop allocations of responsibility among themselves for remedy costs associated with hazardous waste sites. I have also served as an expert witness, explaining to courts and federal administrative tribunals how PRPs developed such allocations to aid the court's final determination of allocations. I have served as allocation consultant and mediator at over 90 hazardous waste sites located throughout the nation. These sites have involved from 2 to 1,500 PRPs and addressed a wide range of circumstances, including landfills, industrial sites, mining operations, and contaminated aquifers and river sediment.

My experience with the determination of liability and equitable responsibility of PRPs for the costs of remediation pursuant to CERCLA extends back to the early 1980s when, as Enforcement Counsel for USEPA, I led Agency negotiations obtaining one of the first settlements for remediation of hazardous waste contamination. I subsequently served as USEPA counsel in the successful resolution of numerous actions brought under CERCLA, the Resource Conservation and Recovery Act, the Clean Water Act, and other environmental authorities.

In the mid-1980s, the USEPA Assistant Administrator for Enforcement designated me to the new position of Enforcement ADR Specialist with responsibility for developing the use of mediation and allocation in the resolution of hazardous waste remediation and civil enforcement actions. My efforts resulted in the issuance, in 1987, of the first federal agency guidance on the use of ADR and establishment of a nationwide program providing allocation and mediation services to disputants in judicial and administrative litigation. In April 1983, I was assigned to lead a taskforce of the Superfund Administrative Improvements Project charged with developing and piloting allocation methodology for the resolution of cost disputes at multi-party Superfund sites. As part of this effort, I conducted a series of trainings and presentations for federal agencies and national law firms to educate USEPA and US Department of Justice attorneys and private counsel about the design and conduct of allocations. In October 1994, USEPA issued a report entitled "Developing Allocation Among Potentially Responsible Parties for the Costs of Superfund Site Cleanups," based on my experience and that of other allocation experts.

During the mid-1990s, EPA further utilized my expertise in allocation practice in several ways. I was the primary author of Section 413 of the Superfund Reform Act of 1994, which Congress considered but did not enact. This provision provided for the use of an allocation process, conducted by a non-government, third-party neutral, as the basis of settlement between USEPA and PRPs for the costs of remediating Superfund sites. The proposed allocation process, conducted pursuant to the "Gore factors"[1] and other judicially established equitable considerations, would have resulted in the potential for a site-specific recommendation of a fair share of responsibility for site costs to all site PRPs, including orphan parties. I represented USEPA in congressional deliberations regarding the allocation provisions of the proposed legislation and through presentations to the American Bar Association and professional organizations regarding the allocation procedure.

During 1994-1995, I led a USEPA pilot of the allocation process proposed in the 1994 legislative proposal. The pilot encompassed the use of allocation to establish equitable shares of site costs for use in USEPA settlements with PRPs at sites of varying sizes and types located throughout the nation. As primary author of the allocation methodology utilized during the pilot, I served as mediator and allocation consultant to support the efforts of selected allocators and parties.

In 1996, the USEPA Administrator assigned me to the position of Senior ADR Specialist. Originally located in the Office of Enforcement and Compliance Monitoring, my position was reassigned to the Office of General Counsel in 2002, where I continued to serve until leaving the Agency in 2015. My primary responsibility as Senior ADR Specialist was to provide mediation and allocation services to facilitate settlements among groups of PRPs noticed as potentially liable for site remediation pursuant to CERCLA. In this unique position, I provided confidential services to private parties and their counsel pursuant to the ADR Act of 1996, which prohibits the disclosure of communications between a party and an ADR neutral either voluntarily or through judicial or administrative process. In this role, I served as an allocation specialist and mediator for PRP groups at scores of Superfund sites throughout the nation, facilitating deliberations regarding group organization and funding, mediating settlement discussions, and

[1] "Gore factors," and how they are used in CERCLA allocations, are explained below.

conducting allocations regarding the equitable sharing of site costs. My practice specialized in assisting PRPs at complex, multi-party sites with substantial regional impacts including diverse, aquatic sediment, mining, and groundwater contamination.

In March 2015, I left EPA and joined AlterEcho, a national environmental consulting firm, as mediator and allocation expert. I specialize in providing PRPs a range of ADR and technical services to support the resolution of allocation disputes at federal and state hazardous waste sites.

From 1990-2000, I was adjunct faculty for Vermont Law School, where I taught a course on the use of allocation specialists in Superfund disputes. I am currently adjunct faculty for Georgetown University Law Center, where I have provided classes over the past 15 years in effective dispute resolution. I have also served as visiting faculty and am a frequent presenter on effective dispute resolution and allocation practice for universities, federal and state bar associations, and professional associations.

My resume, with a list of many of my allocation and mediation cases, is included as Attachment A to this Report. Several current and recent cases illustrate this experience.

- I am serving as an allocator conducting a multiyear allocation of responsibility among a group of ninety PRPs noticed as potentially liable by USEPA for contamination of a major urban waterway. The case addresses sediment contamination spread over more than eight miles of the river by a diverse range of contaminants, created by releases from operations at manufacturing and industrial facilities over the past 100 years. I am assisting the PRPs through conducting an allocation to determine responsibility and drafting an expert report for use in settlement negotiations.
- I am serving as allocation expert in support of federal and state litigation by the water department of a large municipality regarding contamination of a major urban aquifer. The case addresses groundwater contamination spread over many square miles by a diverse range of contaminants impacting multiple well fields, created by releases from operations at hundreds of facilities over the past 80 years. I am assisting plaintiffs through conducting an allocation to determine PRP responsibility and drafting an expert report for use in settlement and litigation testimony.
- I am serving as a mediator assisting PRPs to reach an agreement on the allocation of responsibility for contamination associated with historic operations of a concrete manufacturing facility. I am assisting the private parties through facilitation of their allocation deliberations and mediation of settlement negotiations with USEPA.
- I served as an allocation consultant for the current owners of an industrial property seeking contribution for natural resource damages associated with an estuarine site from a former owner/operator of the property. I assisted plaintiffs through conducting an allocation to determine PRP responsibility and drafting an expert report for use in settlement negotiations.
- I served as an allocation consultant to several major hazardous waste transportation companies in support of settlement deliberations regarding the appropriate assignment of responsibility for remediation of a large industrial landfill. My efforts involved evaluation of voluminous site records and production of an expert allocation report.

I am being compensated at a rate of $425 per hour for my work in preparing this Report and $750 for litigation testimony, respectively. My compensation is not dependent on my opinions or on the outcome of litigation.

Over the past four (4) years, I have testified at trial and in deposition in one (1) matter: *El Paso Natural Gas Co., L.L.C. v. United States of America*, in US District Court for the District of Arizona. My personally authored publications over the past ten (10) years are limited to recordings of presentations on behalf of the American Bar Association, Maryland State Bar Association, and Georgetown University Law Center.

B. Resources Relied Upon

Paul Chang and Josh Shear of AlterEcho assisted me with research in the preparation of this Report. However, the analysis and opinions expressed in this Report are mine alone.

I have also relied upon information received from Stephan Broek and Rajiv Dhameja of Hatch Ltd. regarding aluminum reduction industrial practices, Andrew Baris and Laura Jensen of Roux Associates Inc. regarding Site conditions, and the Expert Report of William Muno in the preparation of this Report. The information provided has helped form the basis for my opinions expressed in this Report. However, the analysis and opinions expressed in this Report are mine alone.

In preparing this Report, members of my staff and I considered various documents. However, I have not undertaken a review of the entire record available in this case. Attachment B is a list of materials that members of my staff and I have considered. In addition, I have read and considered the Court cases listed in the body of this Report.

II. PARTIES TO THE ALLOCATION

This Report addresses the allocation of responsibility between enumerated parties ("Party" or "Parties") ARCO and CFAC, as they are further described below. For purposes of allocation, I deem each of the Parties to be liable as an owner and as an operator pursuant to CERCLA. I have made no independent evaluation of the basis of any Party's liability; rather, I am expressing my opinion regarding a fair and equitable allocation should the Court determine that a Party is liable as an owner and/or operator pursuant to CERCLA.[2]

III. SITE BACKGROUND

A. Site Owner/Operator History

The timeline of ownership and operation of the Site and aluminum reduction facility is as follows:

[2] See 42 U.S.C. § 107(a).

- Anaconda Aluminum Company (Anaconda) – Anaconda Copper Mining Company, original owner of the property and builder of the aluminum reduction facility, was reorganized as Anaconda; owned the site and operated the aluminum reduction facility from 1955 to 1981
- Atlantic Richfield Company (ARCO) – In 1981 Arco completed a merger with the Anaconda Aluminum Company, which owned and operated the Columbia Falls facility through an operating division known as Anaconda Aluminum until September 1985
- Montana Aluminum Investor's Corporation (MAIC) – Acquired the Site and facility from ARCO in September 1985; owned the Site and operated the aluminum reduction facility thereafter until 1999
- Columbia Falls Aluminum Company, LLC (CFAC) – Purchased MAIC; current owner of the Site; Current owner; operated the aluminum reduction facility from 1999 to 2009[3]

B. History of Facility Operations

Aluminum was produced at the Site from 1955 to 2009. The Anaconda aluminum reduction facility (Anaconda Facility or the Facility) began operating with two potlines (described further below) in 1955 and an annual capacity of 67,500 tons per year (using 120 pots per potline). Aluminum production capacity at the Site was increased over the years to a total of 5 potlines, housed in 10 potrooms, with a capacity of 180,000 tons per year by 1965.[4] A description of the aluminum reduction process and associated waste streams, and its application to operation of the Anaconda Facility, is included as Attachment C. Information from this attachment and other documents noted in Attachment B pertinent to my proposed allocation methodology is set forth below and in subsequent sections of this Report.

C. Anaconda Facility Aluminum Reduction Process

During aluminum production, the Hall-Heroult process and Vertical Stud Soderberg technology were used to reduce alumina (aluminum oxide) into aluminum. Aluminum oxide was dissolved into sodium aluminum fluoride (cryolite) bath in a carbon-lined pot heated to 1760° F (960° C). Electric current was run through a carbon anode made of petroleum coke and pitch to a carbon cathode (the steel pot, firebrick liner, and a layer of carbon paste), reducing the aluminum ions in alumina to aluminum metal while consuming the anode. As a result of this process, molten aluminum was formed at the bottom of the pot. The molten aluminum was tapped from the pot and sometimes blended into an alloy depending on the customer's order. The aluminum or alloy was then transferred to the casting area and cast into ingots as the finished product for shipment off-site.

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[3] Some of these details differ from those described in the Draft Remedial Investigation ("RI") report. The history described here is taken from ARCO's May 29, 2015 letter to USEPA in response to USEPA's proposal to add the Site to the CERCLA National Priorities List. *See* CFAC0440871.

[4] *See* ARC-00002864; ARC-00013275 (concerning history of site operations and production capacity).

D. Anaconda Facility Primary Waste Streams

The aluminum production process used at the Anaconda Facility produced several types of waste products that were managed as a part of facility operations. The primary waste streams containing contaminants that have created the need for remediation of areas of the Site and groundwater, the "contaminants of concern" (COCs),[5] are associated with the operation of reduction potlines, potline air emission control scrubber systems, and general facility materials and waste handling.

SPL – The aluminum reduction process generated spent potliner ("SPL"). During the aluminum reduction process, sodium in the cryolite bath gradually penetrated the carbon paste lining of the pot, causing the carbon to swell and eventually fail. The ARCO Facilities Manual reports that the average life of a reduction pot at the Anaconda Facility was $4^{1/2}$ years. To reuse a failed pot, the spent lining of the pot was removed and replaced. The SPL consisted of a thick layer of carbon bonded to an insulating brick layer, which over the course of aluminum reduction became contaminated with fluoride, cyanide, sodium, and aluminum.

SPL was deposited in the unlined West Landfill, unlined Central Landfill, unlined Wet Scrubber Sludge Pond, and lined East Landfill beginning in 1955. In 1990, EPA classified SPL as a hazardous waste[6] and all SPL was thereafter shipped off-site for disposal at permitted hazardous waste landfills.

SPL Soak Water – SPL was removed from spent pots by filling the pots with water to loosen and release the liner. Water used to release the liner, which became contaminated with cyanide and fluoride, was drained to the North Percolation Ponds.

Wet Scrubber Sludge – The aluminum production processes generated air emissions which were controlled using wet scrubbers until the systems were upgraded to dry scrubbers between 1976-1978. Operation of the wet scrubber systems created both waste sludge and waste water contaminated with fluoride and PAHs. Contaminated sludge generated from the wet scrubbers was placed in the Wet Scrubber System Sludge Pond and contaminated wastewater was discharged to the North Percolation Ponds.

[5] As noted in the Baseline Human Health Risk Assessment ("BHHRA") and Baseline Ecological Risk Assessment ("BERA") for the Site, approved by USEPA in September 2019, the chemicals that were determined to contribute to unacceptable risks to human health and the environment creating the need for remedial actions at the Site are cyanide, fluoride, polycyclic aromatic hydrocarbons ("PAHs"), and certain metals. Originally referred to as the contaminants of potential concern ("COPCs") and contaminants of potential ecological concern ("COPECs"), EPA designated these chemicals as the official contaminants of concern ("COCs") for purposes of Site remedial decisions in September 2019.

[6] See Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6901 *et seq.*, 40 CFR 261.32 (Hazardous wastes from specific sources, listing K088 ("Spent potliners from primary aluminum reduction")).

> Other Releases – In addition to the managed releases of contaminants noted above, operations at the Anaconda Facility also resulted in the release of a variety of contaminants through daily facility operations. These included spills during the transportation and transfer of industrial material for use at the facility and waste products. Resulting contamination of surface soils impacted operational areas of the Site north of the main plant, including the Main Plant area, and material storage and handling areas.

As noted in the Baseline Human Health Risk Assessment ("BHHRA"), Baseline Ecological Risk Assessment ("BERA"), Draft Remedial Investigation ("RI") Report,[7] and Expert Report of William Muno, disposal of facility waste products contaminated with COCs have created unacceptable risks to human health and the environment requiring remediation of the Site. The primary risk is created by the presence of cyanide and fluoride in Site groundwater from the disposal of SPL, which discharges to the surface, contaminating Site soils and surface water in certain locations. Other risks are created by the presence of COCs, primarily polycyclic aromatic hydrocarbons ("PAHs") and metals, in soils and sediments at discernable locations on the Site. Due to the nature of Facility production and waste disposal practices, there are specific areas of the Site where remedial actions will be required by EPA to address these risks to human health and ecological receptors that were created by particular activities of each Party.

IV. ALLOCATION METHODOLOGY

I have been requested to provide my expert opinion on an appropriate methodology which the Court could apply to the facts at the Site that would result in a fair and equitable allocation as between ARCO[8] and CFAC[9] of (1) response costs accrued to date by CFAC and (2) future costs associated with response actions at the Site. To do so, I have developed a recommended allocation approach based on the Parties' involvement and activities that resulted in the need for and scope of the future remedial actions required to be undertaken at the Site. I have also identified allocation factors that I believe are relevant and appropriate for an allocation of this matter and are typically considered in sites of this type, for the consideration of the Court.

At Superfund sites such as the Anaconda Aluminum Company Columbia Falls Reduction Plant Site, courts typically conduct an equitable allocation through consideration and application of relevant allocation factors to the unique facts of the case in order to determine responsibility for costs associated with response actions required by each Party's activities. Moreover, even where, as here, the USEPA has not made final remedy decisions regarding contamination at a

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[7] CFAC is undertaking completion of a Remedial Investigation/Feasibility Study (RI/FS) at the Site under the supervision of the U.S. Environmental Protection Agency (USEPA), pursuant to an Administrative Order on Consent which it signed with the Agency in November, 2015. USEPA is reviewing CFAC's Draft RI Report.

[8] For the purposes of this Report, ARCO is deemed responsible for the site-related actions and activities of Anaconda.

[9] For the purposes of this Report, CFAC is deemed responsible for the site-related actions and activities of MAIC.

Site, courts have rendered judgment regarding party responsibility for future remedial actions, to be translated into an actual cost figure once the Agency makes its final cleanup decisions.[10] In the current case, I recommend that the Court's allocation analysis be conducted using a methodology that employs four slightly differing approaches to account for the unique facts and circumstances associated with this Site. None of these allocations requires USEPA to have made a final remedy selection.

(1) As noted above, the disposal of SPL at the West Landfill, Center Landfill, and Wet Scrubber Sludge Pond created the primary risk to human health and the environment at the Site through contamination of Site groundwater that spread across the Site and discharged contamination to other areas of the Site. SPL was also disposed at the East Landfill, but such disposal did not contribute to the risk associated with Site groundwater. The relative allocated responsibility of each Party for the unique impact of SPL disposal on the need for remedial actions at each of these four identified areas of contamination may be readily determined by the Court, based on available evidence regarding each Party's historic operation of the facility and the risks created by each such area. As explained below, it is recommended that the relative annual volume of SPL created and disposed by each Party provides a firm basis for allocation of Party responsibility for the costs associated with SPL-related contamination.

(2) As explained below, the contamination of groundwater requiring remediation was created primarily by three (3) discrete areas of contamination on the Site: the West Landfill, Center Landfill, and Wet Scrubber Sludge Pond. Resulting groundwater contamination flowed across the Site and discharged to the surface, contaminating and requiring remediation of the South Percolation Ponds. The relative allocated responsibility of each Party for the remediation of groundwater and groundwater-contaminated areas may be readily determined by the Court through an accounting of each Party's relative responsibility for each source area of groundwater contamination and the relative impact of each source area on the risk to human health or the environment associated with Site groundwater.

(3) The disposal and management of other (non-SPL) facility wastes during general facility operations also created localized areas of risks on the Site requiring remediation, but did not create the level of risk associated with SPL-related contamination. A unique diversity of waste streams contributed to risks associated

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[10] See *City of Colton v. Am. Promotional Events, Inc. W.*, 614 F.3d 998, 1007 (9th Cir. 2010) ("[I]f a plaintiff successfully establishes liability for the response costs sought in the initial cost-recovery action, it is entitled to a declaratory judgment on present liability that will be binding on future cost-recovery actions."); *Boeing Co. v. Cascade Corp.*, 207 F.3d 1177, 1191 (9th Cir. 2000) ("Declaratory relief allocating future costs is … consistent with the broader purposes of CERCLA."); *United Alloys, Inc. v. Baker*, 797 F. Supp. 2d 974, 997, 1004 (C.D. Cal. 2011) ("[I]t is not necessary to determine the nature and amount of future response costs prior to awarding a declaratory judgment in favor of United Alloys") (citation omitted).

with these areas—namely, the Industrial Landfill, Asbestos Landfills, Former Drum Storage Area, Soils North of Main Plant Building, and North Percolation Ponds. Unlike for SPL, facility records do not readily identify each Party's responsibility for generating these wastes. Therefore, a different basis must be used to allocate responsibility among the Parties for areas contaminated by these wastes. As explained below, it is recommended that the relative aggregate volume of aluminum produced by each Party can serve as an appropriate basis for allocation of costs associated with these Site areas, since there is a correlation between the volume of aluminum production and that of wastes created during aluminum production.

(4) There are also costs associated with Site-wide activities that are a part of required remedial actions. Site-wide requirements include the costs of implementing the Remedial Investigation ("RI") and Feasibility Study ("FS"), other preliminary response activities that CFAC has previously undertaken, and certain Site-wide access restrictions and institutional controls that will likely be required. Since these Site-wide activities support all of the location specific remedial actions noted above, I recommend that the relative aggregate volume of aluminum produced by each Party can serve as an appropriate basis for allocation of costs associated with Site-wide requirements.[11]

This Allocation Report ("Report") is offered to assist the Court by proposing an allocation methodology, and suggesting an application of that methodology to the facts and circumstances in this case. This Report should be considered as a framework that can serve as a tool for incorporating the ultimate findings of the Court, providing a method and formulas for the Court's calculation of an appropriate allocation based on its determination of relevant values and shares of a Party's responsibility.

V. ALLOCATION FRAMEWORK

The current case involves the ownership and operation of the same manufacturing facility, used exclusively as an aluminum reduction facility, over a period of fifty-four years, by a succession of owner/operator Parties. This fact situation requires an allocation that equitably accounts for the activities and practices of each owner/operator Party over the life of facility operations to determine the relative impact each Party had on creating the need for remedial actions at the Site.

[11] As explained below and in Attachment C, over the years of aluminum production conducted by ARCO and CFAC, improvements were made in production methods, including installation of improved production processes (Sumitomo technology) and pollution control equipment (dry air emission scrubbers replacing wet scrubbers). Since the installation of these improvements reduced the volume of wastes generated by aluminum production in the facility's later decades of operation, my suggested allocations regarding areas of Site contamination created by general facility operations and Site-wide remedial requirements likely overestimate CFAC's actual contribution to the risks creating the need for remedial actions at the Site. *See* Attachment C. *See also* ARC-00000496; ARC-00002482; CFAC0027293; CFAC0029991; CFAC0097763; CFAC0226770 (documents from 1970s and 1980s concerning effect of implementation of Sumitomo technology on fluoride emissions).

Based on pertinent case law and my experience as a cost allocation neutral, allocator and mediator, allocations of the relative responsibility of similarly liable parties involved in a succession of related activities begins with an analysis of the relative involvement of each PRP in the activities that created the need for remediation in order to establish a "baseline allocation," which is then adjusted as deemed appropriate through consideration of additional equitable allocation factors. As explained in more detail below, I am proposing baseline allocations for this case using information from various company records regarding facility operations and waste handling practices over the life of operations at the Anaconda Facility, as well as journal articles and other materials regarding waste streams typically generated by aluminum reduction facilities such as the Facility that used the Hall-Heroult process and Vertical Stud Soderberg technology.

An equitable allocation of response costs, whenever possible, should consider each Party's responsibility for activities that created the need for required remedial actions, in order to determine the relationship between a Party's activities and the costs of the remedy. (*See, e.g. United States v. Davis*, 261 F.3d 1, 29 (1st Cir. 2001); *Pinal Creek Grp. v. Newmont Mining Corp.*, 118 F.3d 1298, 1301 (9th Cir. 1997); *United States v. Atlas Minerals and Chems., Inc.*, Civ. A. No. 91-5118, 1995 U.S. Dist. LEXIS 13097, at *271 (E.D. Pa. Aug. 22, 1995) ("Ultimately, the allocation of response costs … should consider each party's relative responsibility for (1) the need for remediation at the site, (2) the selection of the particular remedy, and (3) the cost of the selected remedy.")). As noted in the Expert Report of William Muno, there are locations of the Site, contaminated by activities of the Parties, where EPA will likely require remedial actions to address unacceptable risks to human health and the environment, providing a firm basis for assessment of each Party's responsibility for Site costs in this matter. Likewise, where parties respectively contributed meaningfully different volumes or types of hazardous wastes,[12] or are responsible for contamination in distinct areas of the site at issue,[13] courts often allocate with these realities in mind—rather than allocating pro rata based on years of site ownership or total production volumes.

Courts have long recognized the value of using equitable factors to establish appropriate allocation of CERCLA costs among different parties. In order to develop a proposed equitable allocation of remedial costs in the current matter, I have relied on equitable factors that have been used by PRPs and courts at similar Superfund sites. Use of equitable allocation factors in apportioning liability at Superfund sites is an outgrowth of efforts to reasonably address the joint and several liability provisions of CERCLA. While there are no black-letter "rules" or allocation

[12] *See Control Data Corp. v. S.C.S.C. Corp.*, 53 F.3d 930, 933 (8th Cir. 1995) (affirming allocation of disproportionate share of cleanup costs to parties whose waste was particularly toxic); *United States v. Davis*, 31 F. Supp. 2d 45, 61-62 (D.R.I. 1998) ("Here, the amount of hazardous waste attributable to each party varies greatly, and allocating liability on a *per capita* basis would result in shares that are grossly disproportionate to the defendants' relative degrees of responsibility").

[13] *United Alloys*, 797 F. Supp. 2d at 1000-01 ("Flask is responsible for the contamination in the southwestern corner of the Property," while "United Alloys is responsible for the contamination in the northern portion of the Property," and "[t]he Court is satisfied that Flask used exponentially more PCE per year than United Alloys").

"cookbooks" with which to apply factors and derive an allocation, there are commonly accepted factors generally used by parties and the courts to allocate costs at hazardous waste sites. As the Third Circuit recently stated in *Trinity Indus., Inc. v. Greenlease Holding Co.*, 903 F.3d 333, 355-56 (3d Cir. 2018), a district court "may allocate response costs among liable parties using such equitable factors as the court determines are appropriate." *See* 42 U.S.C. § 9613(f)(1). "[T]he law does not command mathematical preciseness from the evidence in finding damages. Instead, all that is required is that sufficient facts . . . be introduced so that a court can arrive at an intelligent estimate without speculation or conjecture." *Scully v. US WATS, Inc.*, 238 F.3d 497, 515 (3d Cir. 2001) (alterations in original) (internal quotation marks and citations omitted). *See also Atlas Minerals*, 1995 U.S. Dist. LEXIS 13097, at *136 ("[T]he allocation of appropriate costs must be decided based on equitable factors that the court deems appropriate in light of the facts of the individual case. Section 113(f)(1) provides the court with broad discretion in making allocation decisions."). Courts throughout the nation, in addition to PRPs involved in consensual settlement negotiations, have relied on equitable factors to serve as a guide for allocation. *See United States v. R.W. Meyer, Inc.*, 932 F.2d 568, 572 (6th Cir. 1991); *Kerr McGee Chem. Corp. v Lefton Iron & Metal Co.*, 14 F.3d 3221, 326 (7th Cir. 1994).

A. Allocation Factors

There are six factors set forth in a 1980 amendment to CERCLA offered by then-Representative Al Gore. Although this amendment was never enacted into law, numerous courts have held that these factors (often referred to as the "Gore" factors) provide a logical starting point for allocation in cost recovery and contribution cases. *See United States v. A&F Materials Co.*, 578 F.Supp. 1249, 1256-57 (S.D. Ill. 1984). The Gore factors are:

1. The ability of the party to demonstrate that its contribution to a discharge, release or disposal of a hazardous substance can be distinguished;

2. The amount of the hazardous substances involved;

3. The degree of the toxicity of the hazardous substances involved;

4. The degree of involvement by the party in the generation, transportation, treatment, storage, or disposal of the hazardous substance;

5. The degree of care exercised by the party with respect to the hazardous substance concerned, taking into account the characteristics of such hazardous substance; and

6. The degree of cooperation by the party with federal, state, or local officials to prevent any harm to the public health or the environment.

Based on pertinent case law and my experience as a cost allocation specialist, I believe that the following factors are appropriate to establish a share of responsibility in cases such as the current with a succession of owner/operators conducting similar operations at the same location:

- The volume of the hazardous substances deposited and managed on the Site by the Parties;
- The degree of involvement by each of the Parties in the generation, transportation, treatment, storage, or disposal of the hazardous waste requiring remediation;
- The impact of each Party's involvement in the generation, transportation, treatment, storage, or disposal of the hazardous waste on the need for remediation;
- The degree of control and care exercised by each of the Parties with respect to the hazardous waste concerned, taking into account the characteristics of such hazardous waste; and
- The degree of cooperation by each of the Parties with Federal, State, or local officials to prevent any harm to the public health or the environment.

(*See*, *e.g.*, *TDY Holdings LLC v. United States*, 885 F.3d 1142, 1146 n.1 (9th Cir. 2018); *Asarco LLC v. Atl. Richfield Co.*, 353 F. Supp. 3d 916, 953-94 (D. Mont. June 26, 2018).)

In this Report,[14] these factors will be applied in the allocation framework as follows:

<u>Determination of the Baseline Allocation</u>

- The relative volumes of the hazardous substances deposited and managed at various areas on the Site by the Parties;
- The degree of involvement by each of the Parties in the generation, transportation, treatment, storage, or disposal of the hazardous waste requiring remediation;
- The impact of each Party's involvement in the generation, transportation, treatment, storage, or disposal of the hazardous waste on the need for remediation, including both initial disposal and subsequent migration of contaminants.

<u>Adjustment to the Baseline Allocation through consideration of additional equitable factors</u>

- The degree of control and care exercised by each of the Parties with respect to the hazardous waste concerned, taking into account the characteristics of such waste;
- The degree of cooperation by each of the Parties with Federal, State, or local officials to address the contamination.

[14] I express no opinion on whether, and if so how, the Court should consider any relative benefits among the parties regarding the sale of the Anaconda Facility to CFAC or its potential future sale to another entity.

B. Baseline Allocation

The Baseline Allocation with respect to future remedial actions is comprised of a consistent but separate analysis for each of the areas of the Site where disposal activities of the Parties created the need for response actions, and for groundwater.[15]

In conducting such an analysis, allocation professionals and courts use or otherwise endorse a methodology which incorporates "risk factors" into mathematical formulas to calculate and translate the relative responsibility of Parties into a percentage share.[16] Such a methodology often incorporates use of (escalating numerical values) to represent the level of risk created by a Party's activities, or varying COC toxicity, that is creating the need for remedial actions. The use of numerical values to represent the relative risk attributable to different circumstances affecting a Site is a well-established allocation practice[17] and one that I utilize in my recommended allocation approach.

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[15] *See Davis*, 31 F. Supp. 2d at 63 (citing as first of four categories in which critical factors for allocation can be grouped "[t]he extent to which cleanup costs are attributable to wastes for which a party is responsible").

[16] *See United States v. NCR Corp.*, No. 10-C-910, 2017 U.S. Dist. LEXIS 134577, at *46 (E.D. Wis. Aug. 22, 2017) (endorsing a settlement based on a point-based allocation formula in which possible points were divided among various equitable allocation factor scoring categories including, *inter alia*, pollutant discharge, geographic distribution, and non-cooperation with the Government). *See also Caldwell Trucking PRP Grp. v. Pullman Co.*, Civil Action No. 95-1690 (DMC), 2002 U.S. Dist. LEXIS 28410, at *47-48, *77-80 (D.N.J. Nov. 21, 2002) (adopting allocation methodology that applied "a potential toxicity multiplier" based on wastes' hazardous content, a multiplier of 0.25 factor for waste not deposited in onsite lagoons, a multiplier of 0.10 for waste destined for offsite disposal, and a multiplier of 2.50 for waste proven to be completely industrial, rather than mixed industrial and sanitary), *aff'd sub nom. Caldwell Trucking PRP v. Rexon Tech. Corp.*, 421 F.3d 234 (3d Cir. 2005).

[17] *See* Zuckerman, Bois & Johnson, *Environmental Liability Allocation Law and Practice* 206 (Thomson Reuters 2019) ("There are many aspects of site history and use that can be incorporated as factors in cost allocation. These factors may include quantitative measurements of relative contribution, such as site area, relative years of operation or site use attributable to each PRP, the years of chemical use or disposal at the site, and rates of Chemical use or disposal. An important allocation factor is the history of site releases of hazardous substances. Site use factors may also include more qualitative aspects, such as the quality of chemical or waste handling and management practices, regulatory compliance, and interaction with regulatory agencies. These factors can be grouped into a site history or site use factor for each PRP multiplied by an assigned weighting factor, or it may be divided into separate allocation factors representing the years of operation or site use by each PRP, relative areas of site operations, and periods and rates of chemical use or disposal by each PRP. In such cases, a weighting factor would then be assigned to each factor reflecting its relative importance compared to all other allocation factors.").

1. Baseline Allocation for Site Disposal Areas

a. Relevant Considerations

Risks to human health and the environment were created at disposal areas of the Site by two types of Party activities: (1) disposal of COCs at specific locations on the Site (disposal areas), and (2) maintenance of the disposal areas following use, that to varying degrees allowed or prevented continued migration of the deposited COCs. I recommend that the following facts be considered regarding the impact of Party activities on creating the need for remedial actions at each of the identified disposal areas in determining an appropriate Baseline Allocation for each Party regarding disposal areas.

Disposal of COCs

Materials containing COCs disposed of at the Site were created by two primary facility waste management operations: (1) the disposal of the spent liners of reduction pots (SPL) and (2) the intentional or random placement of other wastes during facility operations generally.

The disposal of SPL created the primary risk to human health and the environment at the Site—groundwater contamination by COCs, cyanide and fluoride, that spreads and discharges to the surface contaminating additional areas of the Site.

The disposal of other facility wastes created localized areas of risks through potential exposure to other COCs, primarily PAHs and metals.

Disposal areas were constructed either (a) unlined or (b) with installation of a clay or synthetic bottom liner. Disposal areas that had no bottom liner allowed rain and other surface water that infiltrate into the contents of the disposal area to entrain and carry COCs into the groundwater, thereby continually contributing to groundwater contamination. Disposal areas that had a bottom liner captured and prevented rain and other surface water that had infiltrated into the contents of the disposal area, thereby protecting groundwater from contamination.

Maintenance of Disposal Areas

Several discrete disposal areas were closed by the Parties at different times with installation of a covering made of either earth and ground cover, clay, or a synthetic material—earthen, clay, or synthetic caps.

While an earthen cap does prevent some harm by preventing direct contact with wastes and the dispersal of wastes at the site via wind and erosion, and limits some rainwater infiltration, it nevertheless does allow rain and other surface water to infiltrate into the contents of the disposal area, leaching COCs into the groundwater, thereby continually contributing to groundwater contamination related risks. Under my recommended allocation, each Party bears responsibility for the number of years it maintained an earthen cap at a disposal area and thus permitted the creation and migration of groundwater contamination to continue.

A clay or synthetic cap, however, prevents both the dispersal of deposited waste via wind and erosion and the infiltration of rain and other surface water into the contents of the disposal area, preventing the leaching of COCs and, thereby, protecting groundwater from contamination.

b. Disposal Area Baseline Allocation Approach

As noted above, the areas of the Site where these disposal activities of the Parties create the need for response actions to address risks to human health and ecological receptors are readily discernable. Therefore, a Baseline Allocation of relative responsibility of each Party for each of these identified areas of contamination requiring remediation created by the disposal of SPL or other facility wastes may be determined through an analysis of: (1) the relative level of risks created by the type of disposal conducted at each area and (2) the relative level of risks created by the type of cap installed and associated maintenance conducted following area closure.

<u>Risk Associated with Disposal</u>

The relative level of risks and associated Party responsibility created by the disposal of SPL at a disposal area may be readily determined through an analysis of company records regarding the volume of SPL created during each year of aluminum production.[18]

For those areas where other facility wastes were disposed, there are no identifiable records regarding the volume of individual wastes. However, as noted in Attachment C, there is a generally direct relationship between the volume of aluminum production and the volume of non-SPL waste created during production of aluminum at an aluminum reduction facility such as the Anaconda Facility. Therefore, the annual volume of Facility aluminum production may be used as a surrogate for the annual volume of waste created from general Facility operations.[19]

<u>Risk Associated with Disposal Area Maintenance</u>

As noted above, the relative level of risks created by a Party's maintenance of a no-longer-used, capped disposal area may be readily determined through analysis of the type of cap which a Party maintained. Proper maintenance ensures the integrity of a cap and protects it from structural failure that would undermine its effectiveness. While all three types of caps installed at disposal areas at the Facility can effectively inhibit contact with

[18] A chart of the volume of SPL created during each year of aluminum production at the facility is included as Attachment D.

[19] A chart of the volume of aluminum produced during each year of facility operations is included as Attachment E.

waste and the dispersal of deposited waste via wind and erosion, a well-maintained clay or synthetic cap also protects groundwater by preventing infiltration of rain and surface water into the contents of a disposal area, thereby preventing leaching of contaminants into groundwater. An earthen cap, however, even if well maintained, will not inhibit this result. In order to account for the relative impact of cap maintenance on the risk to human health or the environment by groundwater contamination, numerical values (factors) may be established which account for the relative contribution of each cap type to groundwater contamination.

I am not aware of scientific data measuring the rate of infiltration of surface water into different disposal areas of the Site covered with an earthen cap over time. In the absence of such data, for the purpose of allocation, I treat infiltration as a constant throughout the period of earthen cap maintenance; that is, I assume that the same magnitude of groundwater contamination occurred each year following the installation of an earthen cap at the relevant disposal area.

Based on my experience as an allocator and common court practice,[20] I recommend application of the following numerical factors to account for the risk associated with cap maintenance:

- For maintenance of an earthen cap, allowing infiltration of surface water to leach COCs into groundwater creating a risk to human health or the environment, application of a Maintenance Risk Factor is recommended to increase the responsibility of the acting Party, calculated as the number of years of cap maintenance increased by 10%; and,

- For maintenance of a clay or synthetic cap, protecting groundwater from the leaching of COCs into groundwater, preventing the creation of a risk to human health or the environment, application of a Maintenance Risk Offset Factor is recommended to decrease the responsibility of the acting Party, calculated as the number of years of cap maintenance decreased by 20%.

c. Methodology for Calculation of Disposal Area Baseline Allocation Shares

The baseline allocated share for each Party may be calculated for each of the areas of the Site where disposal activities of the Parties created the need for response actions as follows.

For each disposal area, determine each Party's **Disposal Risk Value** calculated as:

If disposal area is a primary source of groundwater contamination (West Landfill, Center Landfill, and Wet Scrubber Sludge Pond): The volume of SPL created during years of disposal, OR

[20] *See* Footnote 16.

If disposal area is not a primary source of groundwater contamination (Industrial Landfill, Asbestos Landfills, Former Drum Storage Area, Soils North of Main Plant Building, and North Percolation Ponds): The volume of aluminum produced during years of disposal.

Then continue for each disposal area:

Determine each Party's **Maintenance Risk Value** calculated as:
Years of maintenance of earthen cap, if any, increased by 10% (Risk Factor)

Sum each Party's Disposal & Maintenance Risk Values, if any, to determine each Party's **Total Risk Value**

Divide each Party's Total Risk Value by the sum of both Parties' Total Risk Value to determine each Party's **Baseline Risk Quotient** (rounded to nearest .001)

Multiply each Party's Baseline Risk Value by 100 to determine Party **Baseline Risk Share**

Determine each Party's **Maintenance Benefit Risk Offset** calculated as:
Party years of maintenance of a clay or synthetic cap, if any, multiplied by 20% (Benefit Factor)

Divide each Party's Risk Offset, if any, by 2 to determine each Party's **Risk Offset Percentage**

Offset (+/-) each Party's Baseline Risk Value by the Party Risk Offset Percentages, if any, to obtain each Party's **Disposal Area Baseline Share**

Example:

For West and Center Landfills, and Wet Scrubber Sludge Pond:
Volume of SPL creation during ARCO years of disposal = ARCO Disposal Risk Value
Volume of SPL creation during CFAC years of disposal = CFAC Disposal Risk Value

For Industrial and Asbestos Landfills, Former Drum Storage Area, Soils North of Main Plant Building, and North Percolation Ponds:
Volume of Al production during ARCO years of disposal = ARCO Disposal Risk Value
Volume of Al production during CFAC years of disposal = CFAC Disposal Risk Value

Years of ARCO earthen cap maintenance x 1.1 = ARCO Maintenance Risk Value
Years of CFAC earthen cap maintenance x 1.1 = CFAC Maintenance Risk Value

ARCO Disposal Risk Value + ARCO Maintenance Risk Value = Total ARCO Risk Value
CFAC Disposal Risk Value + CFAC Maintenance Risk Value = Total CFAC Risk Value

Total ARCO Risk Value + Total CFAC Risk Value = Total Risk Value

Total ARCO Risk Value ÷ Total Risk Value = ARCO Baseline Risk Value
Total CFAC Risk Value ÷ Total Risk Value = CFAC Baseline Risk Value

ARCO Baseline Risk Value x 100 = ARCO Baseline Risk Share
CFAC Baseline Risk Value x 100 = CFAC Baseline Risk Share

ARCO years maintaining clay/synthetic cap x .2 = ARCO Risk Offset
CFAC years maintaining clay/synthetic cap x .2 = CFAC Risk Offset

ARCO Risk Offset ÷ 2 = ARCO Risk Offset Percentage
CFAC Risk Offset ÷ 2 = CFAC Risk Offset Percentage

ARCO Baseline Risk + (ARCO Risk Offset Percentage - CFAC Risk Offset Percentage) = **ARCO Area Baseline Share**

CFAC Baseline Risk + (CFAC Risk Offset Percentage - ARCO Risk Offset Percentage) = **CFAC Area Baseline Share**

d. Site Areas Contaminated by Facility Waste Disposal Operations

As noted in the BHHRA, BERA, and the Draft RI Report, the chemicals that were determined to contribute to unacceptable risks to human health and the environment creating the need for remedial actions at the Site—the principal COCs—are cyanide, fluoride, PAHs, and certain metals. The primary risk pathways that need to be addressed by remedial actions were determined to be contact with, and inhalation or ingestion of, surface soil, surface water, groundwater, and sediment and sediment porewater contaminated with these COCs. COCs were deposited in disposal areas and soil at the Site through a variety of activities associated with the normal operation of the facility, including the transportation, handling, and storage of required materials, the movement and storage of liquid and solid waste products, and the release of particulate emissions from vent stacks. Cyanide and fluoride have migrated via groundwater to areas of the Site other than where originally deposited.

The BHHRA, BERA, and the Expert Report of William Muno also note that the management and placement of SPL and other waste products and materials at the Anaconda Facility resulted in the deposition of COCs at specific locations on the Site that now require remedial actions. Areas of the Site at which an unacceptable risk was created by Site operations requiring future remedial action include the following surface locations:

- West Landfill
- Center Landfill
- Wet Scrubber Sludge Pond
- East Landfill
- Former Drum Storage Area
- Industrial Landfill
- Asbestos Landfills

- Soils North of Main Plant Buildings
- South Percolation Ponds
- North Percolation Ponds

A map of the Site identifying the location of these areas is included as Attachment F.

West Landfill – The West Landfill is located north of the Main Plant Building. It was used for the disposal of sanitary wastes, municipal solid waste (MSW), and scrap (steel, wood, strapping, and scrap from shops) from the mid-1960s to 1980 and SPL from the mid-1960s to 1970. The unlined landfill was closed by ARCO in 1981 with the installation of an earthen cap. Closure of the landfill was subsequently enhanced by CFAC in 1992, with the installation of a clay cap, and in 1994, with the installation of a synthetic material cap. The landfill is contaminated with PAHs, and cyanide and fluoride from the disposal of SPL. The Draft RI Report identifies it as one of the major sources of groundwater contamination.

Center Landfill – The Center Landfill is located adjacent to and south-east of the West Landfill. It was used for the disposal of SPL, sanitary, and scrap from shops from 1970-1980. The unlined landfill was closed by ARCO in 1980 with the installation of a clay cap. The landfill is contaminated with PAHs, and cyanide and fluoride from the disposal of SPL. The Draft RI Report identifies it as a secondary source of groundwater contamination.

Wet Scrubber Sludge Pond – The Wet Scrubber Sludge Pond is located adjacent to and south of the West Landfill. It was used as a landfill for the disposal of SPL and other materials from 1955 to the mid-1960s and as a waste pond for the disposal of sludge created through operation of wet scrubbers of the Main Plant Building potline air emissions control systems from the mid-1960s to 1980.[21] The unlined pond was closed by ARCO in 1981 with the installation of an earthen cap and excavated by CFAC in 1998, with excavated materials disposed offsite. The waste pond is contaminated with PAHs, cyanide, and fluoride. The Draft RI Report identifies it as one of the major sources of groundwater contamination.

East Landfill – The East Landfill is located adjacent to and east of the Center Landfill. It was used for the disposal of SPL from 1980-1990. The landfill, which was constructed with a clay liner bottom, was closed by CFAC in 1990 with the installation of a synthetic material cap. The landfill is contaminated with PAHs, and cyanide and fluoride from the disposal of SPL. The Draft RI Report concludes that it is not a source of groundwater contamination.

Former Drum Storage Area – The Former Drum Storage Area is located adjacent to and immediately east of the Wet Scrubber Sludge Pond. It was used for the temporary storage of drums of RCRA listed hazardous substances, primarily spent solvents, for shipment offsite beginning in 1980. Though there is no record of the area's closure, it was no longer being used

[21] Following placement of the earthen cap but prior to excavation, CFAC used the area for disposal of leachate drained from leachate ponds associated with the East Landfill on one instance in both 1994 and 1998. Due to the low concentration of contaminants, the placement of leachate had no significant impact on the level of area soil or groundwater contamination.

by 1996. The surface soil of the area is contaminated with PAHs, metals, cyanide and fluoride.[22] As noted in the Draft RI Report, while this area is a potential source of groundwater contamination, sampling indicates that COC levels decrease in concentration with depth. The Draft RI Report concludes that this fact, as well as the absence of any observed waste materials in area soils, suggest that any contributions from the area to groundwater contamination would be minor relative to the contributions from the other adjacent source areas.

Industrial Landfill – The Industrial Landfill is located north/north-west of the Main Plant Buildings in a location not adjacent to other disposal areas. It was used for the disposal of scrap metal, wood, and MSW from the 1980s-2009. Sources conflict as to whether the Industrial Landfill was first used in the 1970s or the 1980s, but narrative descriptions in the RI/FS Work Plan and Draft RI Report refer to the 1980s. I have, therefore, conservatively assumed a start date of 1985 and that only CFAC used this unlined landfill. It was closed by CFAC in 2009 without the installation of a cap. The landfill is contaminated with PAHs. The Draft RI Report concludes that it is not a source of groundwater contamination.

Asbestos Landfills – The two North Asbestos Landfills are located north of the West Landfill. The two South Asbestos Landfills are located south of the East Landfill. The unlined landfills were used for disposal of asbestos from facility equipment insulation from as early as the 1970s-2009. The two sets of landfills were closed by CFAC in 2009 and ARCO in the 1980s, respectively, with the installation of earthen caps. The landfills are contaminated with asbestos. The Draft RI Report concludes that the landfills are not a source of groundwater contamination.

Soils North of Main Plant Buildings – The area north of the Main Plant Buildings was used for normal facility operations from 1955-2009. Soils in this area are contaminated with a variety of hazardous and non-hazardous materials deposited through spills, air deposition, and other activities related to normal facility operations. The Draft RI Report concludes that this area is not a source of groundwater contamination.

South Percolation Ponds – The three South Percolation Ponds are located in the Riparian Area, between the bank and channel of the Flathead River. The unlined ponds were used to receive wastewater from the facility sewage treatment plant, cooling water, and non-process wastewater from facility operations beginning in the early 1960s and still exist, though only used for storm water management since 2009. Remedial action required to be undertaken at the ponds is due to the contamination of sediments and surface water of the ponds by cyanide and fluoride in groundwater that was discharged from the adjacent banks of the Flathead River. The Draft RI Report concludes that these areas are not a source of groundwater contamination.

North Percolation Ponds – The two North Percolation Ponds are located north and north-west, respectively, of the Main Plant Buildings, connected by an overflow ditch. The unlined ponds were used to receive wastewater from various operations conducted in the area of the Main Plant beginning in 1955 and still exist, though only used for storm water management since 2009. The

[22] No solvents are included among the Site's COCs.

ponds are contaminated with cyanide and PAHs in soil/sediment. The Draft RI Report concludes that they are not a source of groundwater contamination.

A summary of pertinent information regarding the disposal areas of the Site requiring remediation is included below for the convenience of the Court.

Remediation Area	Years of Operation	Construction	Use / Type of Waste
West Landfill	Mid-1960s – 1980	Unlined Bottom Earthen Cap 1981 Clay Cap 1992 Synthetic Cap 1994	Used for disposal of: SPL (mid 1960s – 1970) Sanitary, MSW, scrap (steel, wood, strapping, scrap from shops)
Center Landfill	1970 – 1980	Unlined Bottom Clay Cap 1980	Used for disposal of: SPL, sanitary, scrap from shops
East Landfill	1980 – 1990	Clay Liner Bottom Synthetic Cap 1990	Used for disposal of: SPL (1980-1990)
Wet Scrubber Sludge Pond	1955 – 1980	Unlined Bottom Earthen Cap 1981 Partially Excavated 1998	Used for disposal of: SPL (1955-mid 1960s); Sludge from wet scrubbers (1955-1976)
Former Drum Storage Area	1980 – 1995	Earthen unlined storage pad	Used as storage area for drums of RCRA listed wastes for shipment offsite
South Percolation Ponds	1960s – 2009	Unlined bottom (Still in use)	Used to receive wastewater from: Sewage treatment, cooling of equipment
North Percolation Ponds	1955 – 2009	Unlined Bottom (Still in use)	Used to receive wastewater from: Operations in Main Plant area
Soils North of Main Plant Building	1955 – 2009	(Soils near operations area; not an intended disposal area)	Used as facility operations area (no intentional disposal)
Industrial Landfill	1980s – 2009	Unlined Bottom Closed 2009	Used for disposal of: Scrap metal, wood, MSW
Asbestos Landfill (North & South)	Late 1970s – 2009	Unlined Bottom Earthen Cap 2009	Used for disposal of: Asbestos

e. Relevant Facts for Calculation of Baseline Allocation Regarding Disposal Areas

An analysis of the information above indicates the following relevant facts that are recommended to be taken onto account regarding the responsibility of each party for activities that created the need for remedial action at locations contaminated by facility operations.

West Landfill

- ARCO built this unlined landfill and used it for 16 years. (1965-1981; 1965 selected as indicative of mid 1960s)
- ARCO installed an earthen cap on the landfill and was responsible for maintenance of the earthen cap for 4 years. (1981-1985)
- CFAC never used the landfill but was responsible for maintenance of the earthen cap for 7 years (1985-1992), prior to installing a clay cap in 1992 and, subsequently, a synthetic cap in 1994.
- CFAC has maintained the integrity of clay and synthetic caps for 28 years. (1992-2020)
- The landfill is cited as a major source of groundwater contamination.

Center Landfill

- ARCO built this unlined landfill and used it for 10 years before installing a clay cap in 1980. (1970-1980)
- ARCO maintained the integrity of clay cap for 5 years. (1980-1985)
- CFAC never used the landfill and has maintained the integrity of clay cap for 35 years. (1985-2020)
- The landfill is cited as a secondary source of groundwater contamination.

Wet Scrubber Sludge Pond

- ARCO built this unlined waste pond and used it for 26 years. (1955-1981)
- ARCO installed an earthen cap on the waste pond in 1981 and maintained earthen cap for 4 years. (1981-1985)
- CFAC never used the waste pond but maintained the earthen cap for 13 years (1985-1998), at which time CFAC excavated SPL materials from the area and disposed of excavated material offsite.
- The waste pond is cited as a major source of groundwater contamination.

Former Drum Storage Area

- ARCO built this area and used it for 5 years. (1980-1985)
- CFAC used the area for an undeterminable period of time but not longer than 10 years. (1985-1995)
- CFAC maintained the area for 25 years. (1995-2020)
- The former drum storage area is cited as a potential minor source of groundwater contamination.

South Percolation Ponds

- ARCO built these unlined ponds in the mid-1960s and used the ponds for 20 years. (1965-1985; 1965 selected as indicative of mid-1960s)
- CFAC used the ponds for 24 years. (1985-2009)
- The ponds are still in use to control storm water.
- The ponds are not a source of groundwater contamination requiring remediation.
- The contamination requiring remediation in the South Percolation Ponds was a result of groundwater discharge flowing into the ponds, which contaminated them with cyanide

and fluoride. Therefore, relative responsibility of the Parties should be the same as that for groundwater.

East Landfill

- ARCO built this clay bottom–lined landfill in 1980 and used it for 5 years. (1980-1985)
- CFAC used the landfill for 5 years, prior to installing a synthetic cap in 1990. (1985-1990)
- CFAC has maintained the synthetic cap for 30 years. (1990-2020)
- The landfill is not a source of groundwater contamination requiring remediation.

Industrial Landfill

- CFAC built and used this unlined landfill for 24 years. (1985-2009; 1985 selected as indicative of 1980s)
- CFAC closed the landfill in 2009 and has maintained the area for 11 years. (2009-2020)
- The landfill is not a source of groundwater contamination requiring remediation.

Asbestos Landfills

- ARCO built these unlined landfills and used them for 7 years. (~1978-1985; 1978 selected as indicative of late 1970s)
- CFAC used the landfills for 24 years (1985-2009), prior to installation of an earthen cap in 2009.
- CFAC has maintained the earthen cap for 11 years (2009-2020).
- The landfills are not sources of groundwater contamination requiring remediation.

Soils North of Main Plant Building

- ARCO used this area for 30 years. (1955-1985)
- CFAC used this area for 24 years. (1985-2009)
- CFAC has maintained this area for 11 years. (2009-2020)
- The area is not a source of groundwater contamination requiring remediation.

North Percolation Ponds

- ARCO used the ponds for 30 years. (1955-1985)
- CFAC used the ponds for 24 years. (1985-2009)
- The ponds are still in use to control storm water.
- The ponds are not a source of groundwater contamination requiring remediation.

f. Calculation of Disposal Area Baseline Allocation Shares

Applying the methodology recommended in Section V.B.1.c. to the above facts results in the following baseline share for each Party for the disposal areas requiring remedial actions:

1. Disposal Areas Contaminated by SPL

West Landfill (Unlined 1965-1981) ARCO **95.9%** CFAC **4.1%**

Party Disposal Risk Contribution
ARCO (1965-1970) = 30,251 metric ton (mt) SPL = 100%
CFAC (no use) = 0 mt SPL = 0%

Party Maintenance Risk Contribution
ARCO 4 + 10% = 4.4 *(Maintained earthen cap – groundwater risk)*
CFAC 7 + 10% = 7.7 *(Maintained earthen cap – groundwater risk)*

Party Total Risk Contribution
ARCO 4.4 + 100 = 104.4
CFAC 7.7 + 0 = 7.7

(104.4 + 7.7 = 112.1)

Party Baseline Risk Share
ARCO 104.4 ÷ 112.1 = .931 x 100 = 93.1%
CFAC 7.7 ÷ 112.1 = .069 x 100 = 6.9%

Party Risk Offset
ARCO 0 yrs x 20% = 0%
CFAC 28 yrs x 20% = 5.6% x .5 = 2.8% Offset *(Maintained clay cap – protects groundwater)*

Party Total Disposal Area Baseline Share
ARCO 93.1% + 2.8% = **95.9%**
CFAC 6.9% - 2.8% = **4.1%**

Center Landfill (Unlined 1970-1980) ARCO **100%** CFAC **0%**

Party Disposal Risk Contribution
ARCO (1971-1980) = 114,814 mt SPL = 100%
CFAC (no use) = 0 mt SPL = 0%

Party Maintenance Risk Contribution
N/A

Party Risk Offset
ARCO 5 yrs x 20% = 1% Offset *(Maintained clay cap - protects groundwater)*
CFAC 35 yrs x 20% = 7% Offset *(Maintained clay cap - protects groundwater)*
(7% - 1% = 6% ÷ 2 = 3%)

Party Total Disposal Area Baseline Share
ARCO 100% + 3% = **103%**[23]
CFAC 0% - 3% = **-3%**
(resulting values justified to 100%-0% for Disposal Area calculation; Maintained below for purposes of Groundwater share calculation)

Wet Scrubber Sludge Pond (Unlined 1955-1980) ARCO **91.0%** CFAC **9.0%**

Party Disposal Risk Contribution
ARCO (1955-1964) = 43,128 mt SPL = 100%
CFAC (no use) = 0 mt SPL = 0%

Party Maintenance Risk Contribution
ARCO 4 yrs + 10% = 4.4 *(Maintained earthen cap – groundwater risk)*
CFAC 12 yrs + 10% = 13.2 *(Maintained earthen cap – groundwater risk)*

Party Total Risk Contribution
ARCO 100 + 4.4 = 104.4
CFAC 0 + 13.2 = 13.2

(104.4 + 13.2 = 117.6)

Party Baseline Risk Share
ARCO 104.4 ÷ 117.6 = .888 x 100 = 88.8%
CFAC 13.2 ÷ 117.6 = .112 x 100 = 11.2%

Party Risk Offset
ARCO 0 yrs x 20% = 0%
CFAC 22 yrs x 20% = 4.4% x .5 = 2.2% Offset *(Excavated SPL contents – protects groundwater)*

Party Total Disposal Area Baseline Share
ARCO 88.8% + 2.2% = **91%**
CFAC 11.2% - 2.2% = **9%**

[23] In practical terms, my recommended allocation would allocate 100% of costs associated with the Center Landfill to ARCO. The 103% figure—which results from the 3% Party Risk Offset to CFAC for its maintenance of a clay cap—is important because my recommended allocation for groundwater combines the total Disposal Area Baseline Shares for the West Landfill, Center Landfill, Wet Scrubber Sludge Pond, and East Landfill (including any Party Risk Offsets) to determine an aggregate Groundwater Baseline Share.

East Landfill (Lined 1980-1990) ARCO **62.1%** CFAC **37.9%**

Party Disposal Risk Contribution
ARCO (1981-1985) = 38,586 mt SPL
CFAC (1985-1990) = 26,665 mt SPL
65,251 mt

ARCO 38586 ÷ 65251 = .591 x 100 = 59.1%
CFAC 26665 ÷ 65251 = .406 x 100 = 40.9%

Party Maintenance Risk Contribution
N/A

Party Risk Offset
ARCO 0 yrs x 20% = 0%
CFAC 30 yrs x 20% = 6% ÷ 2 = 3% Offset *(Maintained synthetic cap – protects groundwater)*

Party Total Disposal Area Baseline Share
ARCO 59.1% + 3% = **62.1%**
CFAC 40.9% - 3% = **37.9%**

2. Disposal Areas Contaminated by General Facility Operations

Industrial Landfill (Unlined 1985-2009) ARCO **0**% CFAC **100**%

Party Disposal Risk Contribution
ARCO (no use) 0 lbs x1000
CFAC (1985-2009) 6,437,299 lbs x1000

(0 + 6,437,299 = 6,437,299)

ARCO 0 ÷ 6,437,299 = .0 x 100 = 0%
CFAC 6,437,299 ÷ 6,437,299 = 1 x 100 = 100%

Party Maintenance Risk Contribution
ARCO 0 yrs + 10% = 0
CFAC 11 yrs + 10% = 11.1 *(No cap – No groundwater risk but risk of content disbursal)*

Party Total Risk Contribution
ARCO 0 + 0 = 0
CFAC 100 + 11.1 = 111.1

(0 + 111.1 = 111.1)

Party Baseline Risk Share
ARCO 0 ÷ 111.1 = .0 x 100 = 0%
CFAC 111.1 ÷ 111.1 = 1 x 100 = 100%

Party Risk Offset
N/A

Party Disposal Area Baseline Share
ARCO 0%
CFAC 100%

Asbestos Landfills (Unlined 1978-2009) ARCO **27.0%** CFAC **73.0%**

Party Disposal Risk Contribution
ARCO (1978-1985) 2,249,888 lbs x1000
CFAC (1985-2009) 6,437,299 lbs x1000

(2,249,888 + 6,437,299 = 8,687,187)

ARCO 2,249,888 ÷ 8,687,187= .259 x 100 = 25.9%
CFAC 6,437,299 ÷ 8,687,187 = .741 x 100 = 74.1%

Party Maintenance Risk Contribution
N/A

Party Risk Offset
ARCO 0 yrs x 20% = 0%
CFAC 11 x 20% = 2.2% ÷ 2 = 1.1% Offset *(Maintained earthen cap – No groundwater risk; Prevents surface erosion)*

Party Disposal Area Baseline Share
ARCO 25.9% + 1.1% = **27.0%**
CFAC 74.1% - 1.1% = **73.0%**

Former Drum Storage Area (1980-1995) ARCO **31.5%** CFAC **68.5%**

Party Disposal Risk Contribution
ARCO (1980-1985) 1,652,006 lbs Aluminum (Al) x1000
CFAC (1985-1995) 3,590,984 lbs Al x1000

(1,652,006 + 3,590,984 = 5,242,390)

ARCO 1,652,006 ÷ 5,242,390 = .315 x 100 = 31.5%
CFAC 3,590,984 ÷ 5,242,390 = .685 x 100 = 68.5%

Party Maintenance Risk Contribution
N/A

Party Risk Offset
N/A

Party Total Disposal Area Baseline Share
ARCO 31.5% +/- 0% = **31.5%**
CFAC 68.5% +/- 0% = **68.5%**

Soils North of Main Plant Building (1955-2009) ARCO **53.4%** CFAC **46.6%**

Party Disposal Risk Contribution
ARCO (1955-1985) 7,060,033 lbs x1000
CFAC (1985-2009) 6,437,299 lbs x1000

(7,060,033 + 6,437,299 = 13,497,332)

ARCO 7,060,033 ÷13,497,332 = .523 x 100 = 52.3%
CFAC 6,437,299 ÷ 13,497,332 = .477 x 100 = 47.7%

Party Maintenance Risk Contribution
N/A

Party Risk Offset
ARCO 0 yrs x 20% = 0%
CFAC 11 x 20% = 2.2% ÷ 2 = 1.1% Offset *(Maintained earthen cap – No groundwater risk; Prevents surface erosion)*

Party Disposal Area Baseline Share
ARCO 52.3% + 1.1% = **53.4%**
CFAC 47.7% - 1.1% = **46.6%**

North Percolation Ponds (1955-2009) ARCO **53.4%** CFAC **46.6%**

Party Disposal Risk Contribution
ARCO (1955-1985) 7,060,033 lbs x1000
CFAC (1985-2009) 6,437,299 lbs x1000

(7,060,033 + 6,437,299 = 13,497,332)

ARCO 7,060,033 ÷13,497,332 = .523 x 100 = 52.3%
CFAC 6,437,299 ÷ 13,497,332 = .477 x 100 = 47.7%

Party Maintenance Risk Contribution
N/A

Party Risk Offset
ARCO 0 yrs x 20% = 0%
CFAC 11 x 20% = 2.2% ÷ 2 = 1.1% Offset *(Maintained earthen cap – No groundwater risk; Prevents surface erosion)*

Party Disposal Area Baseline Share
ARCO 52.3% + 1.1% = **53.4%**
CFAC 47.7% - 1.1% = **46.6%**

2. **Baseline Allocation for Groundwater and Areas Contaminated By Groundwater**

a. Relevant Considerations

As noted above, groundwater in the upper hydrogeologic zone of the Site is contaminated with cyanide and fluoride. The unlined West Landfill and unlined Wet Scrubber Sludge Pond are cited as the primary sources of elevated concentrations of cyanide and fluoride in Site groundwater. The unlined Center Landfill is cited as likely a secondary source area based on elevated concentrations of the chemicals found in groundwater adjacent to the landfill. The Former Drum Storage Area is also cited as potential though minor contributing source. Groundwater flows under the Site in a south/south-westerly direction until it discharges to the surface at natural discharge points referred to as the Seep Area and then to the Flathead River. The Seep Area is located south of the Main Plant Buildings. The groundwater is the primary source of the cyanide and fluoride concentrations in surface water measured in these areas, which includes the South Percolation Ponds.[24]

Groundwater becomes contaminated through two interactions with the source areas—primarily by rainwater infiltrating down through the source area contents picking up contaminants on its way to groundwater and potential contact by groundwater with contaminated materials in some source areas when the level of groundwater may rise to the level of the source area contents during the annual wet season. Cyanide and fluoride emanate from the identified source areas and migrate with the groundwater in a south/south-westerly direction from the noted landfills and waste pond toward the Flathead River, following the natural flow of the Site groundwater within the upper hydrogeologic unit. All other COCs identified in soil, sediment, or surface water

[24] Certain production wastewaters sent to Facility percolation ponds were authorized to be discharged to groundwater pursuant to Montana Pollution Discharge Elimination System (MPDES) permits, beginning in 1984. See Ground Water Pollution Control System Permit MGWPCS0005. In 1994, CFAC was issued Permit MT-0030066 authorizing the discharge of production wastewater sent to Site percolation ponds to groundwater with ultimate natural release to a designated Flathead River mixing zone. Similar MPDES permits were issued to CFAC until permanent closure of the Anaconda Facility in 2009.

samples within the groundwater contamination source areas appear to be stable and not migrating at levels of concern.

b. Groundwater-Related Baseline Allocation Approach

As noted above, groundwater requiring remediation was contaminated primarily by three (3) discrete areas of contamination on the Site: the West Landfill, Center Landfill, and Wet Scrubber Sludge Pond.[25] Each of these areas was noted in the Draft RI Report as being a major or secondary sources of groundwater contamination, indicating each area's relative contribution to the risk attributable to groundwater contamination. Therefore, a Baseline Allocation of relative responsibility of each Party for groundwater contamination may be determined through: (1) an accounting of each Party's relative responsibility for each source area and (2) an analysis of the relative impact of each source area on the risk to human health or the environment by groundwater contamination.

<u>Party Responsibility for Source Area</u>

The relative responsibility of each Party for each source area may be determined through adopting the analysis of relative responsibility established for each source area noted above.

<u>Source Area Contribution to Risk</u>

In order to account for the relative impact of each area on the risk to human health or the environment by groundwater contamination, a numerical value (Risk Factor) may be established considering the relative contribution of each source area to the risk attributable to groundwater contamination. As noted above, the use of numerical values (factors) to represent the relative risk attributable to different circumstances affecting a Site is well established practice, utilized routinely by allocation professionals and courts.

Based on my experience as an allocator and relevant court rulings,[26] I recommend the following Risk Factors be applied to establish the relative contribution of each source area to the risk attributable to groundwater contamination:

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[25] The Draft RI Report notes a fourth potential minor source of groundwater contamination, the Former Drum Storage Area, which is located immediately west of the Wet Scrubber Sludge Pond, a major source of groundwater contamination. However, the absence of identified waste materials in soils of the Former Drum Storage Area, and the fact that cyanide and fluoride concentrations decrease with increasing depth below the surface, indicate the area is only a minor source of groundwater contamination compared to adjacent disposal areas. Therefore, the area is being treated as an area of general waste disposal for purposes of the allocation.

[26] *See* Footnote 16.

- For areas cited in the Draft RI Report as a major source of groundwater contamination, therefore causing the greatest risk to human health and the environment, a Risk Factor of 2.

- For areas cited in the Draft RI Report as a secondary source of groundwater contamination, therefore causing a risk to human health and the environment, a Risk Factor of 1.

c. Methodology for Calculation of Groundwater-Related Baseline Allocation Shares

The Baseline Allocation share for each Party for creating risks to human health and the environment requiring the remediation of groundwater and groundwater-contaminated areas would be calculated as follows.

For each of the three primary source areas, creation of a Source Area Baseline Value calculated as:

The Baseline Percentage determined for the Party in Section V.B.1.f. for the source area (**Source Area Baseline Percentage**);

Multiplied by an associated Risk Factor (2 or 1 as noted above), that represents the relative potential of that area to contribute to groundwater contamination creating the risk to human health and the environment

Sum the three resulting Source Area Baseline Values to Determine the Party's **Total Baseline Value**;

Divide each Party's Total Baseline Value by the sum of both Party's Baseline Values (recorded to the nearest .001) to determine the Party's **Source Area Baseline Quotient**; and

Multiply each Party's Baseline Quotient by 100 to convert the Baseline Quotient to the Party's **Groundwater Baseline Percentage**.

Example:

For each of the three source areas, determine the Source Area Baseline Value:

ARCO Source Area Baseline Percentage x applied Risk Factor = ARCO Source Area Baseline Value for Groundwater
CFAC Source Area Baseline Percentage x applied Risk Factor = CFAC Source Area Baseline Value for Groundwater

ARCO Area 1 Source Area Baseline Value + ARCO Area 2 Source Area Baseline Value + ARCO Area 3 Source Area Baseline Value = Total ARCO Baseline Value

CFAC Area 1 Source Area Baseline Value + CFAC Area 2 Source Area Baseline Value + CFAC Area 3 Source Area Baseline Value = Total CFAC Baseline Value

ARCO Total Baseline Value ÷ Sum of Parties' Baseline Values = ARCO Baseline Quotient
CFAC Total Baseline Value ÷ Sum of Parties' Baseline Values = CFAC Baseline Quotient

ARCO Baseline Quotient x 100 = ARCO Groundwater Baseline Percentage
CFAC Baseline Quotient x 100 = CFAC Groundwater Baseline Percentage

d. Site Areas Affected by Groundwater Contamination

South Percolation Ponds – The three South Percolation Ponds are located in the Riparian Area, between the bank and channel of the Flathead River. The unlined ponds were used to receive wastewater from the facility sewage treatment plant, cooling water, and non-process wastewater from facility operations beginning in the early 1960s and still exist, though only used for storm water management since 2009. Remedial action required to be undertaken at the ponds is due to the contamination of sediments and surface water of the ponds by cyanide and fluoride in groundwater that was discharged from the adjacent banks of the Flathead River. The Draft RI Report concludes that these areas are not a source of groundwater contamination.

e. Relevant Facts for Calculation of Groundwater-Related Baseline Allocation Shares

Groundwater

Groundwater was contaminated by the three primary source areas noted above:

- West Landfill – A major source of groundwater contamination
- Center Landfill – A secondary source of groundwater contamination
- Wet Scrubber Sludge Pond – A major source of groundwater contamination

South Percolation Ponds

- The contamination requiring remediation in the South Percolation Ponds is a result of groundwater contaminated with cyanide and fluoride that discharged to the surface at the Seep Area of the Site and flowed into the ponds, contaminating them with cyanide and fluoride.

f. Calculation of Groundwater-Related Baseline Allocation Shares

Applying the methodology recommended in Section V.B.2.f. to the above facts results in the following Baseline Allocation share for each Party for contamination of groundwater and groundwater-contaminated areas requiring remedial action:

Groundwater[27] ARCO **95.4%** CFAC **4.6%**

ARCO	
West Landfill	95.9% x 2 = 191.8
(Major source of groundwater contamination)	
Center Landfill	103.0% x 1 = 103.0
(Secondary source of groundwater contamination)	
Wet Scrubber Sludge Pond	91.0% x 2 = 182.0
(Major source of groundwater contamination)	
Total ARCO Groundwater Baseline Value	476.0
CFAC	
West Landfill	4.1% x 2 = 8.1
(Major source of groundwater contamination)	
Center Landfill	-3.0% x 1 = -3.0
(Secondary source of groundwater contamination)	
Wet Scrubber Sludge Pond	9.0% x 2 = 18.0
(Major source of groundwater contamination)	
Total CFAC Groundwater Baseline Value	23.1

(476.0 + 23.1 = 499.1)

Total Groundwater Baseline Share

ARCO 476.0 ÷ 499.1 = .954 x 100 = **95.4%**

CFAC 23.1 ÷ 499.1 = .046 x 100 = **4.6%**

South Percolation Ponds *(Same as for Groundwater)* ARCO **95.4%** CFAC **4.6%**

3. Baseline Allocation for Site-Wide Remedial Requirements

a. Relevant Considerations

As noted above, the Parties are responsible for the completion of Site-wide activities that are a part of required remedial actions. Site-wide requirements include the costs of implementing the Remedial Investigation (RI) and Feasibility Study (FS), other preliminary response activities required to support future remedial actions, and certain Site-wide access restrictions and institutional controls that will likely be required.

[27] Any responsibility of a Party for the migration of contaminants via groundwater is deemed to be included in the outcome of calculations.

b. Site-Wide Requirements Baseline Allocation Approach

Since these Site-wide activities support all of the location specific remedial actions noted above, the relative aggregate volume of aluminum produced by each Party can best serve as an appropriate basis for allocation of the aggregate costs associated with Site-wide requirements

c. Methodology for Calculation of Site-Wide Baseline Allocation Shares

A Baseline Allocation of responsibility of each Party for the implementation of Site-wide remedial requirements should be determined through an analysis of the relative aggregate volume of aluminum production[28] by each Party during their ownership and operation of the Anaconda Facility.

The baseline allocated share for each Party would be calculated as:

The aggregate volume of aluminum production during each Party's ownership and operation of the Anaconda Facility;

Divided by the total volume of aluminum production during the entire history of operations at the Anaconda Facility to determine the Party's Baseline Quotient; and

Multiplied by 100 to convert the Baseline Quotient to the Party's Baseline Percentage.

This calculation would be expressed mathematically as:

ARCO production lbs ÷ Total facility production lbs = ARCO Baseline Quotient x 100 = ARCO Baseline Percentage

CFAC production lbs ÷ Total facility production lbs = CFAC Baseline Quotient x 100 = CFAC Baseline Percentage

d. Relevant Facts for Calculation of Site-Wide Requirements Baseline Allocation Shares

Site-wide remedial requirements, including conducting investigations of Site conditions, preparation of options for future remedial actions, and completion of the Remedial Investigation and Feasibility Study, support and provide the basis for all of the area specific and groundwater related remedial actions noted above.

e. Calculation of Site-Wide Requirements Baseline Allocation Shares

Applying the methodology recommended in Section V.B.3.c., to the above facts results in the following **B**aseline Allocation share for each Party regarding Site-wide requirements:

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[28] A chart of the volume of aluminum produced during each year of facility operations is included as Attachment E.

Site-Wide Requirements ARCO **52.3%** CFAC **47.7%**

Annual Aluminum Production
ARCO (1955-1985) 7,060,033 mt Al
CFAC (1085-2009) 6,437,299 mt Al

Total Aluminum Production
7,060,033 + 6,437,299 = 13,497,332 mt Al

Party Site-Wide Requirements Baseline Percentage
ARCO 7,060,033 ÷ 13,497,332 = .523 x 100 = **52.3%**
CFAC 6,437,299 ÷ 13,497,332 = .477 x 100 = **47.7%**

VI. EQUITABLE ADJUSTMENTS TO BASELINE ALLOCATIONS

A. Equitable Considerations

The baseline allocation recommended above should be adjusted through the consideration of facts that equitably impact the need for and scope of the anticipated Site remediation. As noted in Section V.A of this Report, it is recommended that the following equitable factors be considered to fully develop an allocation of Party shares regarding the risks created by Anaconda Facility operations.

- Degree of control and care exercised by each of the Parties with respect to the hazardous waste concerned, considering the characteristics of such hazardous waste

- Degree of cooperation by each of the Parties with Federal, State, or local officials to address the contamination

1. Degree of Control and Care Exercised in Regard to the Contaminating Activity

Courts have considered the control and care regarding the activity creating the need for and costs of a required remediation in determining the relative level of responsibility that should be borne by parties involved in a contaminating activity. *See Exxon Mobil Corp. v. United States*, 335 F. Supp. 3d 889, 948 (S.D. Tex. 2018) (holding that Exxon's waste-processing improvements "were substantial and appear to support significant waste-reduction adjustments that in turn reduce Exxon's responsibility. . . . [B]ased on the present record, it is clear that the United States has undervalued the benefits and allocation impact of Exxon's post-wartime waste-reduction measures.").

Based on the unique circumstances of this case, the following facts are recommended for the consideration of the Court regarding the degree of control and care exercised by the Parties regarding the disposition of hazardous substances at the Site.

- ARCO's construction and use of unlined landfills and ponds (West and Center landfills and Wet Scrubber Sludge Pond), that did not prevent surface water infiltration resulting in groundwater contamination, for disposal of hazardous substances

- ARCO's capping of unlined landfills containing hazardous substances with earthen caps that did not prevent surface water infiltration, resulting in groundwater contamination

- ARCO's construction and use of the clay-lined East Landfill for disposal of hazardous substances, preventing further groundwater contamination

- CFAC's enhancement of the earthen cap placed on the West Landfill by ARCO with a clay and then synthetic liner cap to prevent surface water infiltration, preventing groundwater contamination

- CFAC's use of the clay-lined East Landfill for disposal of hazardous substances, preventing groundwater contamination

In summary, both Parties had the opportunity to and exercised some care in the handling of hazardous substances created during operation of the Anaconda Facility. However, ARCO's construction and use of unlined ponds for disposal of hazardous substances was the primary cause of groundwater contamination requiring remediation, while constructive actions by CFAC resulted in the prevention of further groundwater contamination.

2. Degree of Cooperation with Agencies to Address Site Contamination

Courts have considered the cooperation of parties with agencies addressing resulting contamination in determining the relative level of responsibility that should be borne by parties involved in a contaminating activity. *See United Alloys*, 797 F. Supp. 2d at 1001 ("United Alloys has cooperated with public agencies, . . ., to investigate the contamination and clean up the property," justifying equitable adjustment); *Gavora, Inc. v. City of Fairbanks*, No. 4:15-cv-00015-SLG, 2017 U.S. Dist. LEXIS 115593, at *22 (D. Alaska July 25, 2017) ("Gavora has made substantial efforts to remediate upon learning of the contamination, whereas the City has not yet paid anything toward the remediation"); *Lyondell Chem. Co. v. Albemarle Corp.*, No. 1:01-CV-890, 2007 U.S. Dist. LEXIS 101795, at *217 (E.D. Tex. Dec. 4, 2007) ("Plaintiffs are deserving of a discount for their cooperation with the government because of their lengthy, substantial participation in the cleanup process at the Turtle Bayou site. . . . By refusing to respond to the EPA's reasonable requests, however, Exxon's conduct warrants an increase in its relative culpability."). *See also Asarco*, 353 F. Supp. 3d at 955 ("Anaconda and Atlantic Richfield's ongoing misrepresentations to the EPA, and to Asarco throughout the course of this litigation, supports an additional $1 million award.").

Based on the unique circumstances of this case, the following facts are recommended for the consideration of the Court to regarding the degree of cooperation by the Parties to address the contamination at the Site.

- Between 2015 and 2018 CFAC voluntarily, and in coordination with the Montana Department of Environmental Quality ("MDEQ"), undertook several measures to prevent contamination in the South Percolation Ponds from being released into the Flathead River due to potential erosion of the riverbank. This work included the design and construction of a bank stabilization project along the Flathead River adjacent to the eastern edge of the South Percolation Ponds, and installation of scour and erosion protection (riprap revetment with geotextile backing) adjacent to the southern edge of the South Percolation Ponds
- In June 2015, CFAC, MDEQ, and Calbag Resources, LLC (Calbag) entered into an Administrative Order on Consent ("AOC") under authority of RCRA, pursuant to which Calbag agreed to undertake the removal of hazardous and nonhazardous wastes from the Main Plant Building and transport it to a permitted hazardous waste disposal facility. On September 21, 2018, MDEQ notified CFAC and Calbag that the requirements of the AOC had been satisfied. Almost 416 million pounds of waste was removed from the CFAC facility, including K088 hazardous waste (SPL), asbestos, nonhazardous solid wastes, and recyclable metals.
- Additionally, pursuant to its agreement with Calbag and in coordination with MDEQ, CFAC paid for the removal of substantial quantities of asbestos-containing material, crushed concrete contaminated with cyanide, PCB-containing transformers, and other wastes. It also paid for the use of non-hazardous crushed concrete, as well as borrow fill from an on-Site excavation area, as backfill in Site voids, basements, and tunnels.
- Throughout EPA's investigations of the Site, CFAC has cooperated with the Agency's efforts. In November 2015, CFAC entered into an AOC with EPA under which it agreed to complete a RI/FS at the Site to investigate Site contamination and develop remedial actions to address identified risks to human health and the environment.
- As noted above, CFAC has submitted a Draft RI Report to EPA and MDEQ, which is currently under review by the agencies. By letter dated June 15, 2015, Arco refused to undertake negotiations with EPA to participate in conduct of the RI/FS study, which CFAC is now undertaking on its own.
- CFAC has prepared a Work Plan for the conduct of a Feasibility Study ("FS") regarding the Site that is also currently under review by EPA and the Montana Department of Health Services, and has committed to conduct the FS once approved.
- CFAC has expended approximately $21.2 million in efforts to address Site contamination to date and estimates that it will expend between $963,000 and $1.5 million to complete the RI/FS pursuant to the 2015 AOC.

In summary, CFAC has cooperated and continues to cooperate with EPA and take additional voluntary efforts to address Site contamination. However, ARCO has not cooperated, and indicates no willingness to cooperate, with EPA or CFAC in efforts to address Site contamination caused in large part by its activities at the Site.

B. Determination of Equitable Adjustment to Baseline Allocations

ARCO and CFAC both had knowledge of the risks associated with contamination created during operations of the Anaconda Facility. However, the relative lack of control and care by ARCO regarding the creation and deposition of hazardous substances created Site groundwater contamination, and had a significant impact on both the scope and costs of required remedial actions. This, coupled with the lack of any effort on the part of ARCO to assist in remediating Site contamination—particularly in contrast to CFAC's continuing cooperation with EPA and the State of Montana—dictates that the baseline allocation share of ARCO be equitably increased.

Therefore, based on my experience as an allocator and common court practice,[29] I recommend that an equitable adjustment of five percent (5%) in favor of CFAC be made to the baseline allocations, with a commensurate increase and reduction of 2.5% in the shares of ARCO and CFAC, respectively.

VII. ALLOCATION RECOMMENDATION

I provide the following compilation of my analysis of the application of relevant allocation factors to the unique facts of this case for the consideration and convenience of the Court.

A. Baseline Allocation Shares

1. Baseline Allocation Regarding Site Disposal Areas

As noted in Section V.B.1.f. of this Report, I recommend that the following Baseline Allocation share of responsibility be assigned to each of the Parties based on their activities that created the need for future remedial actions at areas on the Site contaminated by disposal of SPL and wastes from general Facility operations.

	ARCO	CFAC
West Landfill	95.9%	4.1%
Center Landfill	100.0%	0.0%
Wet Scrubber Sludge Pond	91.0%	9.0%
East Landfill	62.1%	37.9%
Industrial Landfill	0.0%	100.0%
Asbestos Landfills	27.0%	73.0%

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[29] *See, e.g.*, *United States v. Consolidation Coal Co.*, 345 F.3d 409, 414-15 (6th Cir. 2003) (noting that district court doubled party's share of response costs due to its "persistent, pervasive, and unjustified" lack of cooperation with EPA); *Agere Sys. v. Advanced Envtl. Tech. Corp.*, Civil Action No. 02-3830, 2008 U.S. Dist. LEXIS 91887, at *103-04 (E.D. Pa. Aug. 18, 2008) (applying 8.7% adjustment in plaintiffs' favor for defendant's failure to cooperate with EPA), *aff'd in relevant part*, 602 F.3d 204 (3d Cir. 2010); *Raytheon Constructors Inc. v. ASARCO Inc.*, Civil Action No. 96 N 2072, 1998 U.S. Dist. LEXIS 21815, at *36-37 (D. Colo. Apr. 16, 1998) (allocating 40% of "orphan share" to plaintiff based in part on defendant's cooperation with EPA).

Former Drum Storage Area	31.5%	68.5%
Soils North of Main Plant Building	53.4%	46.6%
North Percolation Ponds	53.4%	46.6%

2. Baseline Allocation Regarding Groundwater and Groundwater-Contaminated Areas

As noted in Section V.B.2.f. of this Report, I recommend that the following Baseline Allocation share of responsibility be assigned to each of the Parties based on their activities that created the need for future remedial actions on the Site related to groundwater contamination and the areas contaminated by groundwater.

	ARCO	CFAC
Groundwater	95.4%	4.6%
South Percolation Ponds	95.4%	4.6%

3. Baseline Allocation Regarding Site-Wide Remedial Requirements

As noted in Section V.B.3.e. of this Report, I recommend that the following Baseline Allocation share of responsibility be assigned to each of the Parties based on their activities that created the need for Site-wide remedial requirements.

ARCO	52.3%
CFAC	47.7%

B. **Equitable Adjustment to Baseline Allocation Shares** (5%)

As noted in Section VI.B of this Report, I recommend that the following equitable adjustment be made to each Baseline Allocation share of responsibility of each of the Parties, based on their relative degree of control and care exercised with respect to Site hazardous wastes and cooperation with Federal and State officials to address the contamination.

ARCO	+2.5%
CFAC	- 2.5%

C. Final Allocation Recommendation

Therefore, I offer the following recommendation for the consideration of the Court on an equitable allocation of responsibility between the Parties.
For costs associated with implementation of remedial actions at the Site related to the disposal of SPL or wastes generated by general Facility operations:

	ARCO Baseline Share	ARCO Equitable Adjust.		CFAC Baseline Share	CFAC Equitable Adjust.	
West Landfill	95.9% +	2.5% =	**98.4%**	4.1% -	2.5% =	**1.6%**
Center Landfill	100.0% +	2.5% =	**100.0%**	0.0% -	2.5% =	**0.0%**
Wet Scrubber Sludge Pond	91.0% +	2.5% =	**93.5%**	9.0% -	2.5% =	**6.5%**
East Landfill	62.1% +	2.5% =	**64.6%**	37.9% -	2.5% =	**35.4%**
Industrial Landfill	0.0% +	2.5% =	**2.5%**	100.0% -	2.5% =	**97.5%**
Asbestos Landfills	27.0% +	2.5% =	**29.5%**	73.0% -	2.5% =	**70.5%**
Former Drum Storage Area	31.5% +	2.5% =	**34.0%**	68.5% -	2.5% =	**66.0%**
Soils N of Main Plant Bldg	53.4% +	2.5% =	**55.9**%	46.6% -	2.5% =	**44.1%**
North Percolation Ponds	53.4% +	2.5% =	**55.9**%	46.6% -	2.5% =	**44.1%**
South Percolation Ponds	95.4% +	2.5% =	**97.9%**	4.6% -	2.5% =	**2.1%**
Groundwater	95.4% +	2.5% =	**97.9%**	4.6% -	2.5% =	**2.1%**

For costs associated with implementation of remedial actions at the Site related to groundwater contamination and groundwater-contaminated areas:

	ARCO Baseline Share	ARCO Equitable Adjust.		CFAC Baseline Share	CFAC Equitable Adjust.	
Groundwater	95.4% +	2.5% =	**97.9%**	4.6% -	2.5% =	**2.1%**
South Percolation Ponds	95.4% +	2.5% =	**97.9%**	4.6% -	2.5% =	**2.1%**

For costs associated with implementation of Site-wide remedial requirements:

ARCO	52.3% + 2.5% = **54.8%**
CFAC	47.7% - 2.5% = **45.2%**

ATTACHMENTS

Attachment A – Resume of David C. Batson, Esq.

Attachment B – List of Resources Relied Upon

Attachment C – An Overview of Operations, Emissions, and Spent Potliner Production

Attachment D – Annual Volume of SPL Created by Facility Aluminum Reduction Operations

Attachment E – Annual Volume of Aluminum Production by the Anaconda Facility

Attachment F – Map of Anaconda Facility Site Features and Disposal Areas

ATTACHMENT A

ALTERECHO
plan · act · grow

David C. Batson, Esq.

PROFESSIONAL EXPERIENCE	Years of Relevant Experience: 40.0 Years with TechLaw: 5
EDUCATION	JD, Law, Cumberland School of Law, 1979 BA, History, East Carolina University, 1975

BASIC QUALIFICATIONS

Mr. Batson has 40 years of professional experience assisting private and government parties resolve complex hazardous waste and environmental disputes. This includes over 30 years as an ADR neutral and consulting expert with service in 500+ environmental, natural resource, public policy, organization, and business disputes. He has served as an allocation specialist, convening neutral, and mediator at more than 100 hazardous waste sites, including contaminated riverine/estuarine sediment and groundwater sites, landfills, abandoned mines, and commercial/manufacturing facilities.

Over the past three decades, his practice has specialized in assisting PRPs involved in Superfund sites involving remediation of landfills, facility sites, and sediments and groundwater contaminated by diverse sources. His activities in these cases involve mediation and the design and implementation of effective allocation processes including, as requested by the parties, the submittal of an allocation report based upon analysis of relevant evidence that may include no records, only oral testimony, or a vast quantity of records requiring establishment of an interactive document repository. His allocation activities routinely involve determinations of legal and equitable considerations as required to address issues of divisibility of harm pursuant to CERCLA and other authorities, search of public and private records, identification of PRPs, and determination of party nexus regarding comingled waste streams providing little or no basis for association of contamination with individual sources.

As a nationally recognized expert in ADR and allocation practice, Mr. Batson is often called upon to provide testimony and consultation services in support of litigation in federal and state courts. As trial consultant and testimonial expert he has served in litigation regarding the allocation of CERCLA liability between owners of contaminated property, among owners and operators, and involving government entities. His services have involved negotiation strategy, preparation of expert reports, and depositional and trial testimony.

Mr. Batson also has extensive experience facilitating formation and effectiveness of PRP Groups, including mediation of organizational agreements, consultation on negotiation with regulatory agencies, and conduct of PRP searches. In his former position as Senior Counsel with the EPA Office of Enforcement, he dealt with both legal and technical issues arising in the settlement of numerous hazardous waste sites. He also obtained substantial experience in enforcement procedures and policy regarding regulation of pollution of water, air, toxic substances, and solid and hazardous wastes pursuant to RCRA, CWA, SDWA, CAA, EPCRA, FIFRA, and TSCA.

EXPERIENCE

Allocation / Cost Recovery

➢ EPNG vs United States, Arizona – Served as allocation expert in litigation by mining company regarding equitable responsibility of the United States and private parties for contamination due to historic federal uranium mining program. Provided negotiation strategy consultation, expert report, deposition, and trial testimony.

➢ Diamond Alkali Sediment OU2 Superfund Site, New Jersey – Served as allocator for the design and conduct of a unique allocation process to establish relative responsibility among over 100 PRPs for $1.5 Billion remediation of major urban river settlement site.

➢ San Fernando Valley Groundwater Contamination Site, California – Served as allocation expert in support of litigation and settlement determinations by municipal water supplier for contribution to remedial costs by industrial facilities contaminating major groundwater aquifer. Innovative allocation approach provided basis for determination of equitable allocation despite diverse history of contamination.

➢ Industrial Site Natural Resource Damages, New Jersey – Served as allocation expert in support of litigation between current and former owner of industrial site to establish responsibility for off-site contamination of natural resources. Services included determination of allocation among parties and preparation of testimonial expert report. Efforts lead to favorable pre-trial settlement.

➢ Industrial Site Remediation, Michigan – Served as allocation expert in support of cost recovery litigation between current and former owners and operators of manufacturing facility site to establish responsibility for site remediation costs. Services included determination of allocation among parties and preparation of expert report. Efforts lead to favorable pre-trial settlement.

➢ USOR Landfill Superfund Site, Texas – Served as allocation consultant for waste transportation companies in support of negotiations with members of PRP Group. Efforts resulted in substantial reduction in equitable share of site costs assigned client.

➢ Superior Barrel & Drum Site – Served as allocation expert in support of negotiations among PRPs at major landfill site. Provided expert analysis and organization of site data to establish allocation matrix leading to settlement of all issues.

➢ Tennessee Products Site, Tennessee – Mediated PRP Group organization and funding agreements for landfill site involving multiple corporate, private, municipal, and federal agency PRPs. Designed and conducted allocation of cost recovery claims and future site costs. Mediated RD/RA settlement between PRP Group and EPA resolving all issues.

➢ Upper Trenton Channel GNLPO Site, Michigan – Mediated PRP Group organization and allocation of funding for initial remediation and group costs, and facilitated selection of allocation consultant for sediment site involving heavy metal contamination of Detroit industrial shipping channel subject to Great Lakes Legacy Act.

➢ Tittabawsee River/Saginaw Bay Superfund Site, Michigan – Mediated RD/RA and natural resource damages negotiations for sediment site involving dioxin and metals contamination of river and wildlife refuge. Parties included EPA, Michigan DEQ, Saginaw Chippewa Tribe, Fish & Wildlife Service, NOAA, and Dow Chemical Co.

➢ Portland Harbor Superfund Site, Oregon – Mediated PRP Group organization and funding agreements, including design and implementation of allocation for interim funding, for sediment site involving heavy metals contamination of commercial waterway. Conducted PRP search activities and facilitated selection of allocation consultant.

➢ Lower Passaic River Superfund Site, New Jersey – Mediated PRP Group organization and funding agreements, including design and implementation of allocation for operational funding, for sediment site involving dioxin, PCB and heavy metals contamination of urban waterway. Supported PRP search activities and mediated selection of allocation consultant.

➢ Kalamazoo River Superfund Site, Michigan – Mediated RI/FS and natural resource damages negotiations between EPA, Michigan DEQ, and industrial PRPs for sediment site involving dioxin and heavy metal contamination of river system. Designed and facilitated public meetings regarding selected remedy.

Mediation

➢ Midnite Uranium Mine Site – Mediated negotiations between mining companies, Spokane Tribe, and Federal government, and meetings with local community over Record of Decision for inactive former uranium mine encompassing waste rock piles, backfilled pits and ore/protore stockpiles creating air and groundwater contamination.

➢ Metlakatla Reservation Site, Alaska - Mediated agreement on remedy design and performance of RI/FS for abandoned US Air Force airfield site involving disbursed hazardous waste and groundwater contamination from airfield operations, maintenance facilities, and fuel pipeline systems. Parties included Metlakatla Tribe, BIA, EPA and DOD.

➢ Kelly Air Force Base, Texas - Mediated settlement discussions regarding soil and groundwater contamination resulting from historic operations of closed US Air Force Base. Negotiations involving local community leaders, national environmental justice group, EPA, DOD, CDC and state officials resulted in remediation of contamination, provision of health services, and establishment of regional planning process for future redevelopment of base.

➢ Baton Rouge SIP Agreement, Louisiana – Mediated settlement discussions over nonattainment by the City of Baton Rouge of air pollution standards in state implementation plan. Deliberations between EPA, State environmental officials, and Tulane Environmental Law Clinic representing locally impacted communities resulted in compliance with requirements and installation of regional air monitoring to provide otherwise unavailable information to members of public.

RELATED EXPERIENCE			
EMPLOYMENT	Company	Title	Date Range
	AlterEcho, Inc.	Expert Consultant	2015 - Present
	Georgetown Law School	Adjunct Faculty	2012 - Present
	U.S. EPA Office of General Counsel	Senior Collaboration & ADR Specialist, ADR Counsel	2002 - 2015
	Center for Environmental Training, University of MD	Adjunct Faculty	2010 – 2015
	Coastal America Partnership	Deputy Director	2010 - 2011
	Vermont Law School	Adjunct Faculty	1990 - 2000
	U.S. EPA Office of the Administrator	Senior ADR Specialist/Deputy Dispute Resolution Specialist	1987 - 2002
	Office of Enforcement, U.S. EPA	Senior Counsel	1979 - 1989
	Self-Employed	Owner/Manager of Utility and Residential Construction firms	1975 - 1986
CERTIFICATIONS	➢ Licensed to practice law in North Carolina and Maryland ➢ Advanced Certifications in ADR and Public Participation		
MEMBERSHIPS	➢ Superfund & NRD Litigation Committee, Section on Environment, Energy & Resources, American Bar Association ➢ ADR Committee, Section on Environment, Energy & Resources, American Bar Association ➢ Dispute Resolution Section, American Bar Association ➢ Maryland State Bar Association, ADR Council ➢ Environmental & Public Policy Section, Association for Conflict Resolution		