

**2016 ECR Plan Status Update Report  
Quarterly Report – Update #9  
October 30, 2018**

**Executive Summary:**

**General**

This report covers LG&E and KU’s (“Companies”) progress on the 2016 Environmental Cost Recovery (“ECR”) Plan through the third quarter of 2018.

The overall 2016 ECR Plan safety performance through the third quarter of 2018 remains excellent with a year-to-date OSHA Recordable Incident Rate of 0.24 and an inception-to-date OSHA Recordable Incident Rate of 0.58, compared to the industry average of 3.2. The inception-to-date OSHA Recordable Incident Rate reported last quarter was incorrectly listed as 0.68, when it should have been 0.45.

The total 2016 ECR Plan projected cost has increased from \$871.2 million (net) reported last quarter to \$892.1 million (net), primarily a result of adding \$17.3 million for the E. W. Brown Landfill Phase II and Closure scope to the forecast. Even accounting for this increase, the projected cost remains well below the filed cost: With approval of the E.W. Brown Landfill Phase II and Phase III Closure, the filed estimate for the total 2016 ECR Plan increased from \$993.6 million (net) to \$996.4 million (net).<sup>1</sup> Total spend to date increased from \$360.8 million (net) last quarter to \$431.8 million (net) through September 30, 2018.

**CCR Compliance (CCR Rule and State CCR Pond Closures)**

Safety performance through the second quarter is excellent with a year-to-date OSHA Recordable Incident Rate of 0.24 and an inception-to-date Recordable Incident Rate of 0.60, compared to an industry average Recordable Rate of 3.2.

The total projected costs for the Coal Combustion Residual (“CCR”) Closure Program has increased from \$859.4 million (net) reported last quarter to \$862.9 million (net) to account for weather impacts from September which was the wettest September on record. Total spend to date through September 30, 2018 has increased from \$349.0 million (net) in the last report, to \$419.7 million (net).

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<sup>1</sup> The total 2016 ECR Plan projected costs were provided in Case No. 2016-00026 and Case No. 2016-00027 on a net basis. Co-Owners of the Trimble County plant: Illinois Municipal Electric Agency (IMEA) and Indiana Municipal Power Agency (IMPA) are responsible for 25%. IMEA owns 12.12% and IMPA owns 12.88%. Co-owner share is not included in the costs provided in this report where “net” is shown.

The remaining engineering and procurement activities essentially consist of corrections for field construction impacts on the projects in progress, engineering associated with the diffusers at E.W. Brown, Ghent and Mill Creek for the Process Water System (“PWS”) discharges, and the engineering associated with the change in plans to clean close the Gypsum Storage Pond at Trimble County as discussed in the last quarterly report. The remaining procurement activities are associated with supporting the development of the remaining Request for Quotation (“RFQ”) documents for the closure scopes for Trimble County’s Bottom Ash and Gypsum Storage ponds, the Ghent Phase III of Ash Treatment Basin (“ATB”) #2, and Mill Creek’s Main Ash Pond.

The Company continues to monitor and evaluate changes to the CCR Rule proposed by the U.S. Environmental Protection Agency (EPA) as well as current and pending lawsuits. As of the end of the third quarter 2018, no significant changes have been made to the compliance program.

#### CCR Impoundment Closures

- Ghent – Phase I scope continues to progress well by Tetra Tech. Construction of the cooling channel has been completed and liner installation has started on the North Cooling Pond. Phase II scope (construction of the South Cooling Pond and closure of ATB #1) was awarded through a competitive bid process to Tetra Tech during the third quarter via an Amended and Restated Phase I contract. As reported last quarter, closure of ATB #2 will now be bid separately as a Phase III scope.
- E.W. Brown – Thalle Construction Company (“Thalle”) was awarded on July 9, 2018 the construction of the new Process Water Pond, closure of the Auxiliary Pond, construction of Phase II of the existing landfill and the closure of the non-capped areas of the Main Ash Pond. Thalle has begun full mobilization to the site and initial site investigations.
- Green River – CCR impoundments closure project is progressing to plan by Trans-Ash. Trans-Ash has completed the installation of the process pond and is nearing completion of the main ash pond cap in its entirety. Relocation of the SO<sub>2</sub> pond material into ATB #2 and its regrading is over 50% complete. Installation of the storm-water perimeter ditches surrounding ATB #2 is ongoing.
- Mill Creek – South Ponds (Construction Runoff Pond, Clear-well Pond, and Dead Storage Pond) closure work continues according to plan by MAC Construction (“MAC”). MAC has completed the liner installation of the Construction Runoff Pond and is currently removing CCR material from the Clearwell Pond.
- Pineville – Thalle has begun mobilization to the site.

- Tyrone – Thalle continues to work on construction of a new storm-water runoff pond and has completed the cleanout of the coal pile runoff pond. All of the CCR material in the stockpile area has been relocated into the Ash Pond. Thalle is working on final subgrades to start installation of the capping system in the fourth quarter 2018.

The CCR Impoundment Closure Program is on schedule to be completed on or before the CCR Rule regulatory deadlines.<sup>2</sup> To ensure the Companies’ CCR Compliance projects comply with the regulations and to share best-practices and lessons-learned, the Companies continue to hold program-wide meetings with internal project management teams and affected stations to provide opportunities for all parties to deliver updates and to ensure the contractors are providing similar deliverables across the projects.

### Process Water Systems

- Trimble County – AMEC continues erecting the pipe rack and PWS building steel, installing piping and electrical infrastructure, receiving, inspecting, and placing equipment. AMEC completed erecting and began coating the Wet Flue Gas Desulfurization (“WFGD”) storage tank, equalization tanks, clarifier tanks, and sludge holding tanks.
- Mill Creek – AMEC is nearing completion of design engineering. AMEC is focused on construction of underground utilities, erection of tanks, pipe racks and piping, electrical infrastructure, and the PWS building. MAC has completed the partial lining of the new Knockout Pond, which is a small pond that allows heavy solids to fall out prior to reaching the process water pond.
- Ghent – Burns & McDonnell (“B&McD”) continues to work on engineering activities, procurement of major equipment, underground utilities, setting of building-structure steel, installation of pipe racks and aboveground piping, construction of tanks, installation of electrical infrastructure, and receipt of material.
- E.W. Brown – The PWS scope was awarded to Bowen Engineering in June 2018. Bowen Engineering is also performing a significant portion of the Ghent PWS construction as a subcontractor to B&McD. Bowen’s activities during the quarter focused on engineering and initial site mobilization.

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<sup>2</sup> EPA has committed to revising various portions of the CCR Rule in the period between mid-2018 and the end of 2019. The revised regulatory language is expected to provide clarification to some portions of the Rule which are nebulous while effectively addressing other parts of the Rule which have had legal challenges upheld. An August 21, 2018 decision by the DC Circuit Court has potentially expanded the universe of facilities and units that are subject to the Rule and is expected to force EPA to revise portions of the Rule which it had not anticipated. While these conditions may suggest uncertainty, the Rule’s baseline requirements have not changed and the Companies’ plans were developed to meet those requirements, even at locations that were not previously subject to the Rule. The Companies are well-positioned to comply with the evolving CCR Rule and, as a result, have not significantly changed any of the efforts already underway to comply with the Rule’s basic requirements and deadlines. The Companies will continue to track actions related to the Rule and to ongoing litigation and will provide updates to the Commission as they relate to construction schedules and activities.

Suez, the water treatment technology supplier for the Ghent, Mill Creek, and Trimble County PWS projects, is primarily focused on delivering their equipment to the sites and working in concert with both AMEC and B&McD on erection. To ensure the Companies’ PWS projects share best practices and lessons learned across all projects, the Companies continue to hold program-wide meetings with the owner’s engineers (“OEs”), internal project management teams, and all affected stations. These meetings provide an opportunity for all parties to deliver updates, and ensures the OEs and contractors are providing similar deliverables and lessons learned across the projects.

## Schedules

### Process Water Systems

<u>Project</u>	<u>Project #</u>	<u>EPC Status<sup>3</sup></u>	<u>Planned In-Service Date<sup>4</sup></u>
E.W. Brown Process Water System	KU Project 42	Awarded June 14, 2018	December 2019
Ghent Process Water System	KU Project 40	Awarded August 1, 2017	August 2019
Mill Creek Process Water System	LG&E Project 29	Awarded July 19, 2017	April 2019
Trimble County Process Water System	KU Project 41, LG&E Project 30	Awarded July 7, 2017	May 2019

### CCR Rule and State CCR Impoundment Closures

<u>Project</u>	<u>Project #</u>	<u>EPC Status<sup>3</sup></u>	<u>Planned Construction Completion<sup>3</sup></u>
E.W. Brown Aux Pond	KU Project 42	Awarded July 9, 2018	December 2020
E.W. Brown Main Ash Pond (Deleted Phase III of Landfill)	KU Project 36	Awarded July 9, 2018	December 2019
Ghent ATB #1	KU Project 40	Awarded September 7, 2018	December 2021
Ghent ATB #2	KU Project 40	Issue RFQ 2/3Q 2019	December 2025
Ghent Gypsum Stack	KU Project 40	Amended and Restated Sept. 7, 2018	December 2020
Green River Main Pond	KU Project 39	Awarded July 28, 2017	2Q 2019
Green River ATB #2	KU Project 39	Awarded July 28, 2017	2Q 2019
Green River SO2 Pond	KU Project 39	Awarded July 28, 2017	2Q 2019
Mill Creek Ash Pond	LG&E Project 29	Issue RFQ in 4Q 2018	December 2021
Mill Creek Clearwell Pond	LG&E Project 29	Awarded December 27, 2017	December 2018
Mill Creek Construction Runoff Pond	LG&E Project 29	Awarded December 27, 2017	Completed
Mill Creek Emergency Pond	LG&E Project 29	Construction Completed	Completed
Mill Creek Dead Storage Pond	LG&E Project 29	Awarded December 27, 2017	2Q 2019
Pineville Ash Pond	KU Project 39	Awarded December 7, 2017	2Q 2019
Trimble County Bottom Ash Pond	KU Project 41, LG&E Project 30	Issue RFQ 3Q 2019	December 2025
Trimble County Gypsum Storage Pond	KU Project 41, LG&E Project 30	Issue RFQ 3Q 2019	December 2025
Tyrone Ash Pond	KU Project 39	Awarded December 7, 2017	2Q 2019

<sup>3</sup> Engineering, Procurement, and Construction (“EPC”) Status - the red font signifies actuals.

<sup>4</sup> The Planned In-Service Dates reflect the executed EPCs.

## **E.W. Brown Landfill Phase II**

Thalle was awarded the Phase II construction on July 9, 2018 as part of a site-wide contract which also includes the closure of the Auxiliary Pond and construction of the new PWS pond. Thalle began mobilizing to the site during the second quarter.

### **Quarterly Status Update:**

#### **State Division of Waste Closure Projects:**

##### **KU Project 39 – Green River (GR)/Pineville (PV)/Tyrone (TY) Impoundment Closure**

Green River: KU continues to hold weekly and monthly update meetings to review the current status of the project. The CCR impoundments closure project is progressing to plan by Trans-Ash. Trans-Ash has completed the installation of the process pond and is nearing completion of the main ash pond cap in its entirety. Relocation of the SO<sub>2</sub> pond material into ATB #1 and the ATB #2 regrading is over 50% complete. Installation of the storm-water perimeter ditches surrounding ATB #2 is ongoing. Associated Engineers, Inc. continues to work with KU to perform Construction Quality Assurance (“CQA”) services and AMEC continues to provide OE services on the Green River project.



*Green River CCR Impoundments – Site View - Photo from the July 2018 Report*



*Green River CCR Impoundments – Site View – October 2018*

Pineville: KU is holding weekly and monthly update meetings to review the current status of the project. Thalle has started mobilization to the site. KU has contracted with AMEC to provide CQA and OE services on the Pineville project.



*Pineville Ash Pond – Photo from July 2018 Report*



*Pineville Ash Pond – October 2018*

Tyrone: KU is holding weekly and monthly update meetings to review the current status of the project. Based on discussions with KYDWM, a permit under the current regulations is not required for the facility. Thalle is nearing completion of the new storm-water runoff pond and has completed the placement of CCR fill material within the ash pond. All of the CCR material in the stockpile area has been relocated into the Ash Pond and Thalle is now working on final subgrades to start installation of the liner system in the fourth quarter 2018. AMEC continues to provide CQA and OE services on the Tyrone project.



*Tyrone Ash Pond – Photo from the July 2018 Report*



*Tyrone Ash Pond – October 2018*

**Federal CCR Rule Closure Projects:**

**KU Project 40 – Ghent (GH) Station CCR Rule Compliance Construction and New Process Water Systems**

KU continues to hold weekly and monthly project update meetings. Tetra Tech has completed the construction of the cooling channel and has begun liner installation in the North Cooling Pond. Tetra Tech continues to work towards the contracted completion date.



*Ghent Gypsum Stack – Looking South – Photo from the July 2018 Report*



*Ghent Gypsum Stack – Looking South – October 2018*



*Ghent ATB #1 Cooling Channel – Looking West – Photo from the July 2018 Report*



*Ghent ATB #1 Cooling Channel – Looking West – October 2018*

Phase II scope (construction of the South Cooling Pond and closure of ATB #1) was competitively bid and awarded to Tetra Tech during the third quarter via an Amended and Restated Phase I contract. AMEC continues to perform CQA services and AECOM is providing OE services for KU.

B&McD continues to progress the Ghent PWS scope to plan. B&McD continues to work on engineering activities, procurement of major equipment, underground utilities, setting of

building-structure steel, installation of pipe racks and aboveground piping, construction of tanks, installation of electrical infrastructure, and receipt of material. B&McD is nearing completion of their engineering and procurement activities. Black & Veatch (“B&V”) continues to provide OE services on the Ghent PWS project.



*Ghent PWS Facility – Site View – Photo from the July 2018 Report*



*Ghent PWS Facility – Site View – October 2018*

## KU Project 41 and LG&E Project 30<sup>5</sup> – Trimble County (TC) Station CCR Rule Compliance Construction and New Process Water Systems

The Companies are holding weekly and monthly update meetings. The RFQ issuance for the closure of the Bottom Ash Pond (“BAP”) and Gypsum Storage Pond (“GSP”) has been deferred to the third quarter of 2019 to allow time to complete the design of the GSP clean closure option. To date, onsite activities have been limited to OE site visits, geotechnical explorations, and installation of groundwater monitoring wells. The Companies are performing additional process water chemistry sampling and testing to support analyses on various dewatering options for the BAP.

AMEC is progressing well on the PWS scope and is meeting regularly with Suez and the Companies on PWS detailed design and integration into the existing station facilities. AMEC has completed erecting the WFGD maintenance storage tank, equalization tanks, clarifier tanks, and sludge holding tanks and continues working on underground utilities, structural steel for the PWS building and pipe rack, and setting equipment.

MAC was awarded the Trimble County Process Water Ponds on July 11, 2018. The existing Coal Pile/Limestone Runoff Pond is being repurposed to become the new Process Pond. The Process Pond is being built in two phases, which consists of the South Basin and North Basin, with the South Basin being constructed first and simultaneously with the Knockout Pond (“KOP”). MAC has completed excavating the KOP and Process Pond South Basin to subgrade elevation and is installing storm water structures and piping associated with the ponds.



*Trimble County PWP – Knockout Pond Overview – October 2018*

<sup>5</sup> KU and LG&E’s net costs are split 48%:52% respectively.



*Trimble County PWS Facility – Site View – Photo from the July 2018 Report*



*Trimble County PWS Facility – Site View Looking West – October 2018*

**KU Project 42 – E.W. Brown (BR) Station CCR Rule Compliance Construction and New Process Water Systems**

The award of the PWS EPC was executed on June 14, 2018 with Bowen Engineering. To date, onsite activities have been limited to site visits by the OE, geotechnical explorations, process water testing and installation of groundwater monitoring wells. KU has contracted with AMEC to provide CQA and OE services on the Brown project.



*E.W. Brown Aux Pond – Pre-Construction – Photo from the July 2018 Report*



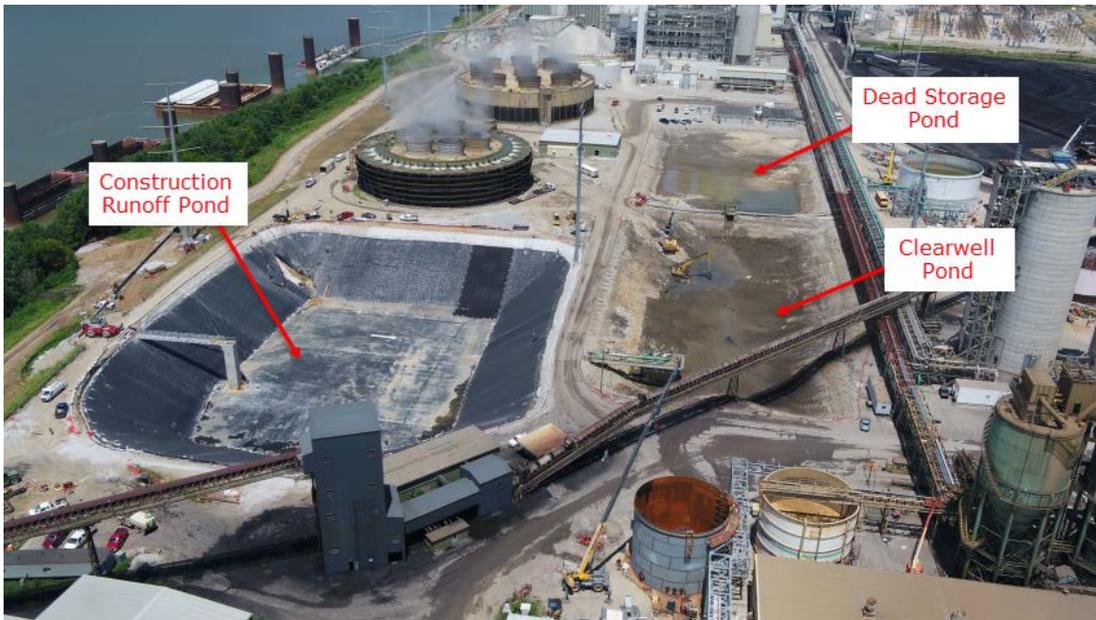
*E.W. Brown Landfill Phase II and Closure – Pre-Construction – July 2018 Report*



*E.W. Brown Landfill Phase II and Closure – October 2018*

**LG&E Project 29 – Mill Creek (MC) Station CCR Rule Compliance Construction and New Process Water Systems**

LG&E is holding weekly and monthly update meetings to review the current status of the project. MAC has completed the Construction Runoff Pond construction. MAC is nearing completion of the removal of CCR from the Clearwell Pond. MAC has nearly completed the Knockout Pond liner system. AMEC continues to perform CQA services and AECOM continues to provide OE services on the Mill Creek closure projects.



*Mill Creek South Ponds – Photo from the July 2018 Report*



*Mill Creek South Ponds – October 2018*

AMEC is progressing well with engineering, procurement and construction activities on the PWS scope and is meeting regularly with Suez and the Companies on PWS detailed design and integration into the existing station facilities. Construction is progressing to plan with substantial progress made on the tank erections. Foundation construction of the PWS is nearing completion. The filter presses have been delivered and set in place. B&V continues to provide OE services on the MC PWS project.



*Mill Creek PWS Facility – Site View – Photo from the July 2018 Report*



*Mill Creek PWS Facility – Site View – October 2018*



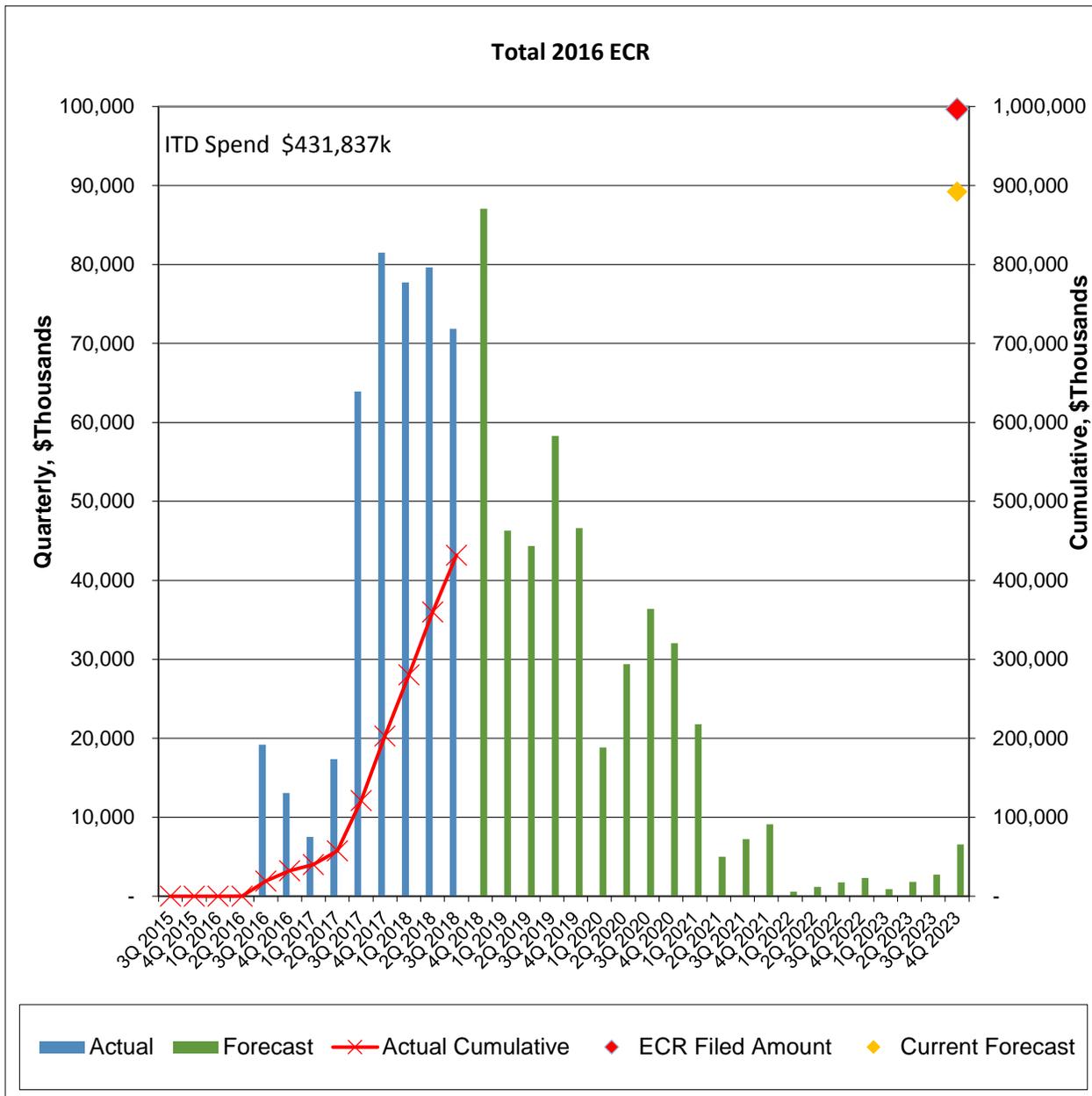
*Mill Creek Knock-Out Pond – Photo from the July 2018 Report*



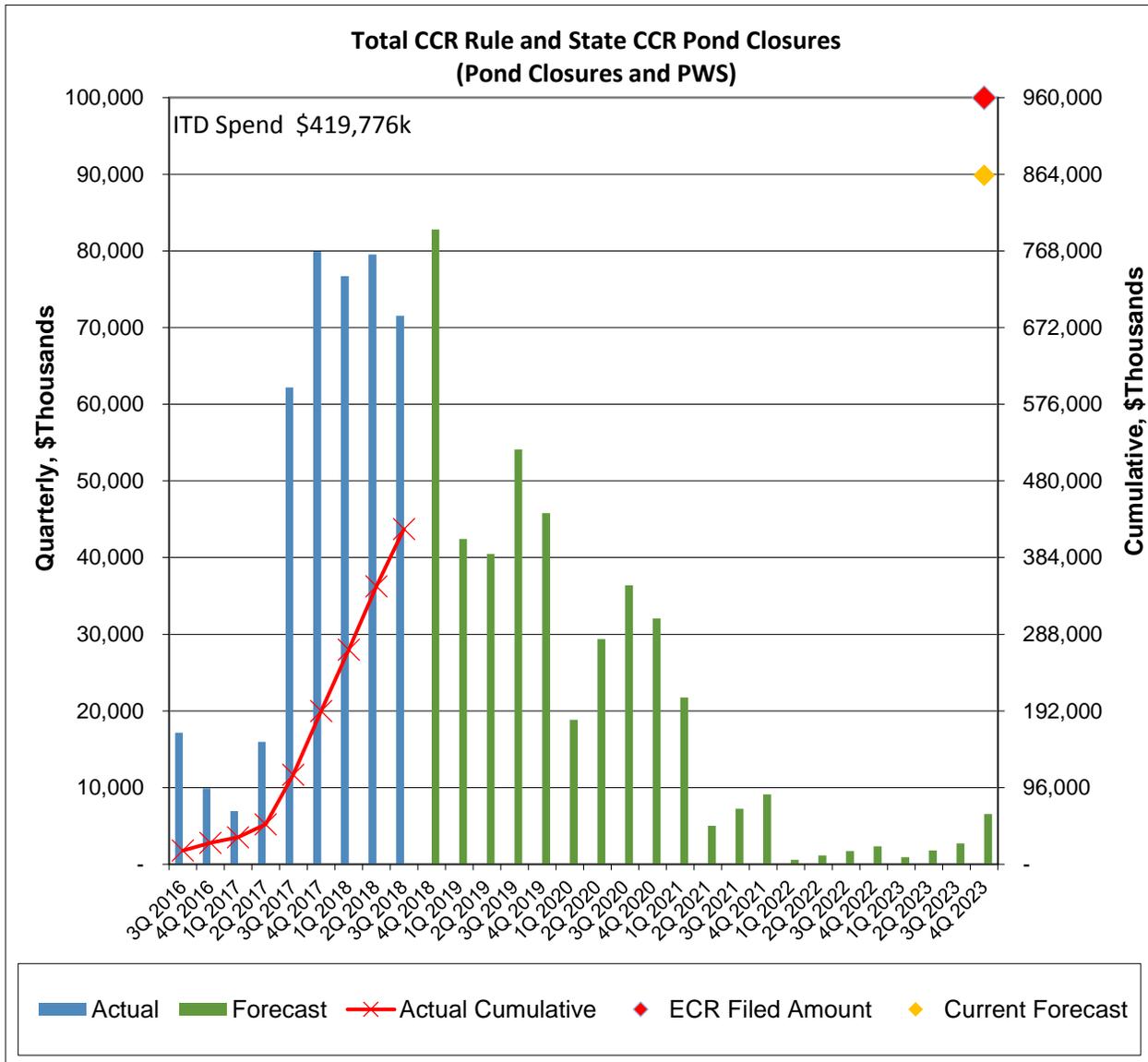
*Mill Creek Knock-Out Pond – October 2018*

**Financials:**

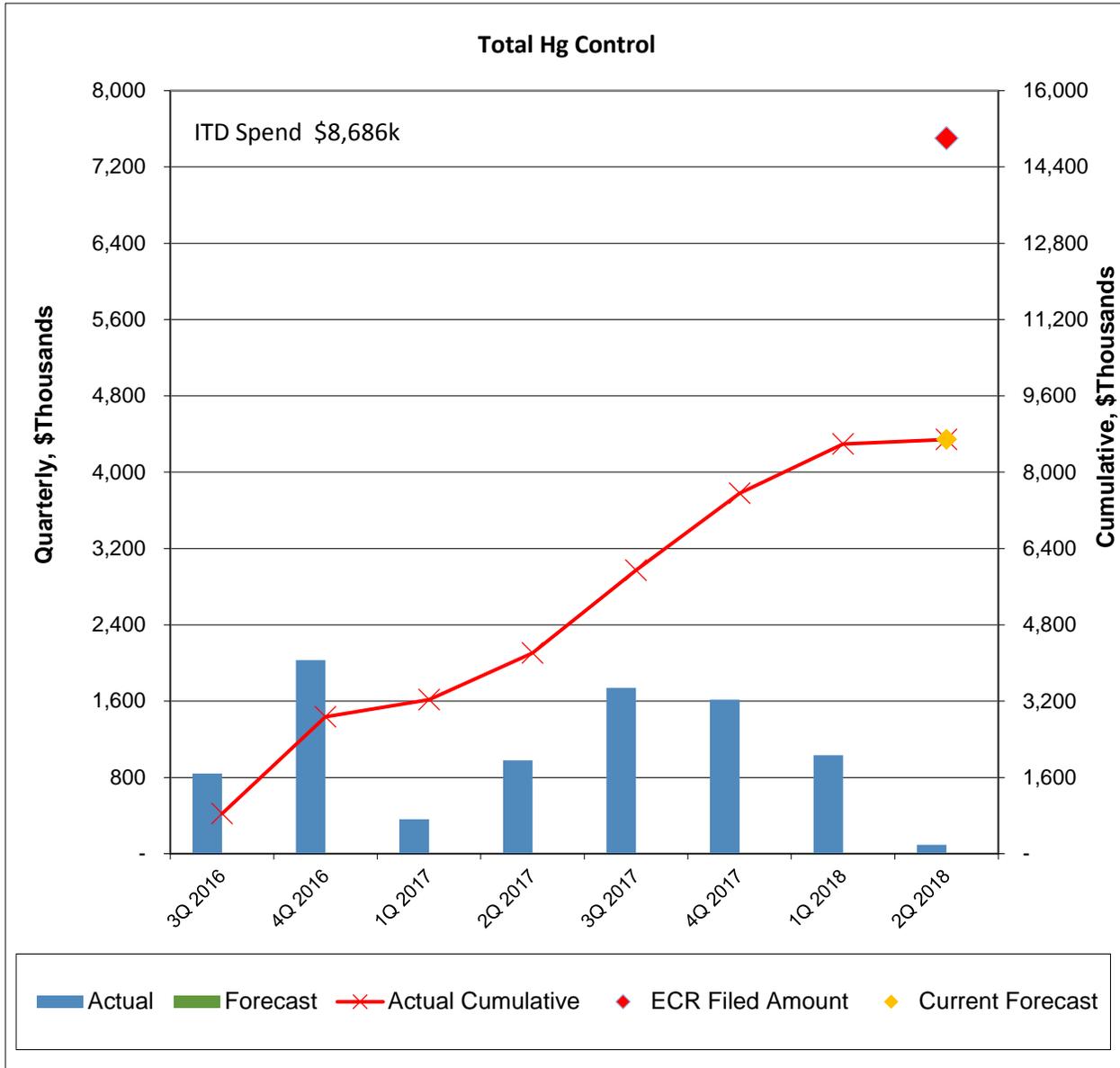
The total 2016 ECR Plan forecasted cost increased from \$871.2 million (net) as reported last quarter to \$892.1 million (net), compared to the filed estimate of \$996.4 million (net) primarily from adding the E.W. Brown Landfill Phase II and Closure scope to the forecast. Total spend through September 30, 2018 has increased from \$360.8 million (net) last quarter to \$431.8 million (net). For the graph below: 1) the chart includes a symbol (♦) to show the current forecast to completion; and an (2) inception-to-date (“ITD”) Spend shown in the upper left of the chart.



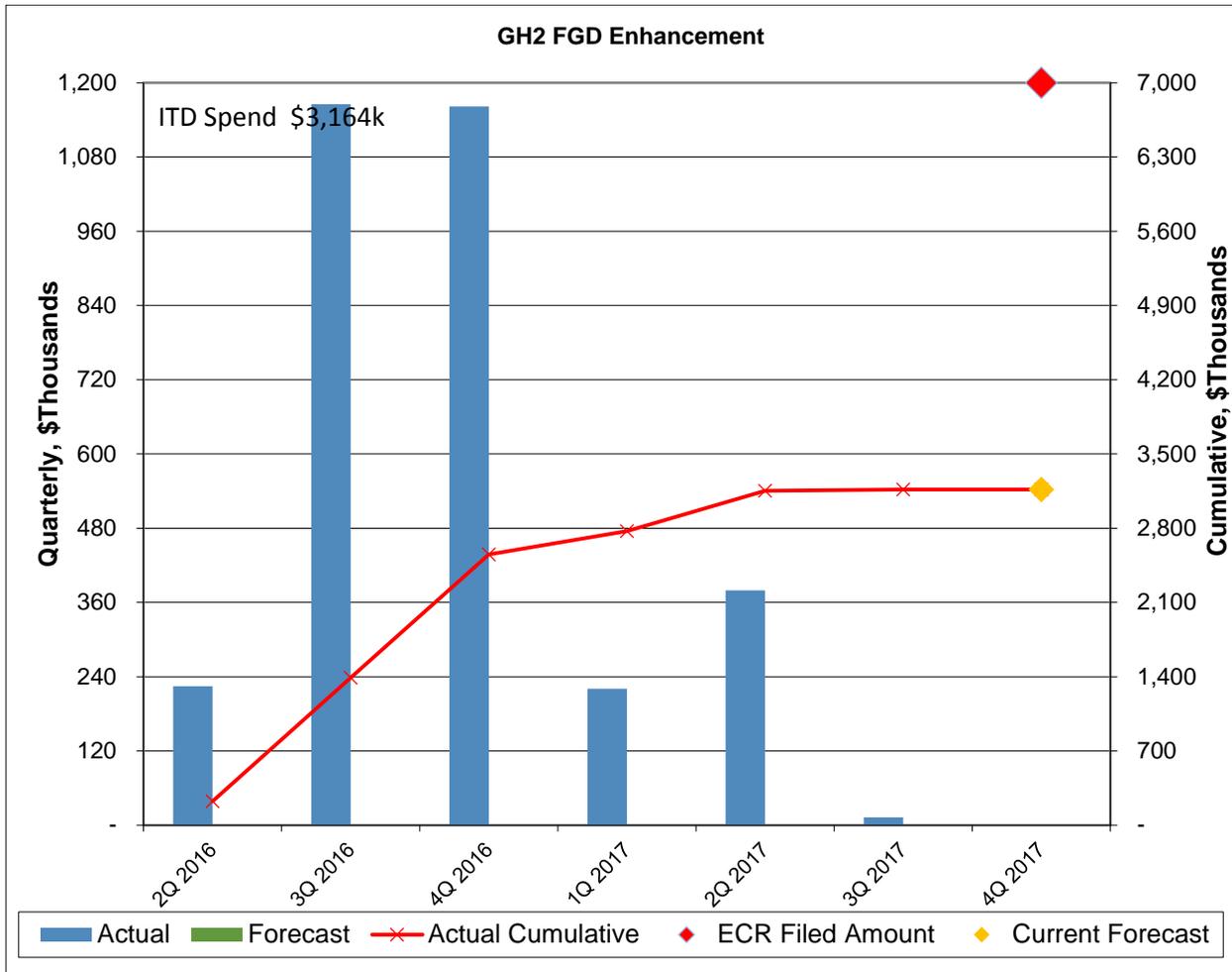
The CCR Impoundment Closure total forecasted cost increased from \$859.4 million (net) to \$862.0 million (net) to account for weather impacts from September which was the wettest September on record. Total spend through September 30, 2018 has increased from \$349.0 million (net) last quarter to \$419.7 million (net). Note for the graph below: (1) the chart includes a symbol (◆) to show the current forecast to completion; and (2) ITD Spend is shown in the upper left of the chart.



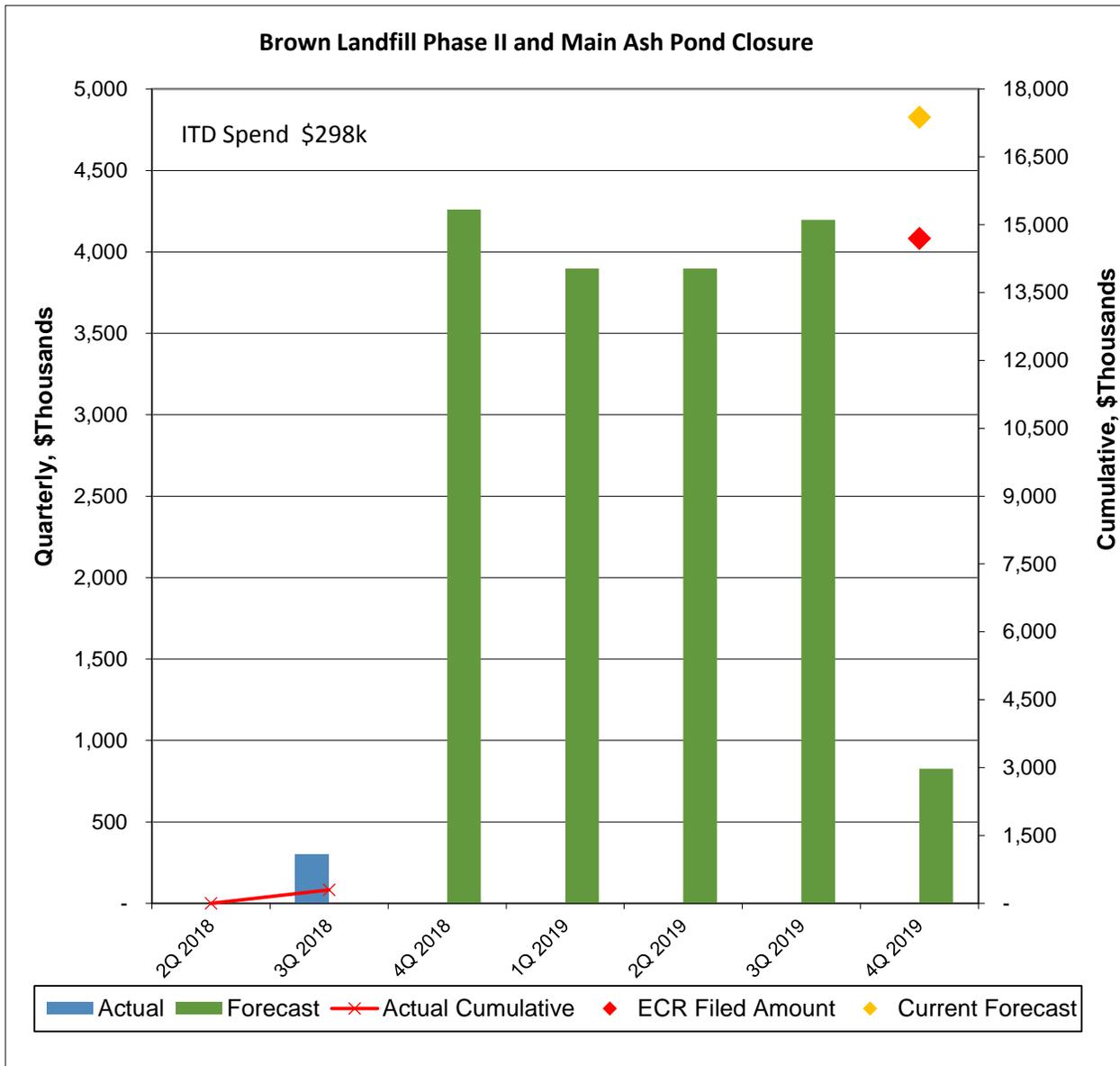
The Mercury Injection projects have been completed and commissioned. The projects' total forecasted cost remains \$8.7 million (net) compared to the filed estimate of \$15.0 million.



The Ghent Unit 2 WFGD Enhancement project has been completed. No change in the total forecasted cost occurred during this reporting period. Total spend on the project was \$3.16 million compared to the filed estimate of \$7.0 million.



Total spend on the E.W. Brown Landfill Phase II and Phase III Closure project was \$298,000 compared to the filed estimate of \$14.7 million. The forecasted cost has increased to \$17.3 million to account for the award of construction to Thalle. Note for the graph below: (1) the chart includes a symbol (◆) to show the current forecast to completion; and (2) ITD Spend is shown in the upper left of the chart.



## **Planned Activities for Next Quarter:**

### **State Division of Waste Closure Projects**

Closure work on the Green River CCR impoundments will continue as planned. Thalle will also continue advancing the closure of the CCR impoundment at Pineville and Tyrone as planned.

### **Federal CCR Rule Closure Projects**

#### CCR Closures:

Tetra Tech will continue with Phase I and Phase II closure activities at Ghent, as well as continue engineering and execution activities associated with the recovery efforts. At Mill Creek, MAC will continue closure activities on the Clearwell Pond. Construction will continue on the E.W. Brown CCR impoundment closure scope.

#### Process Water Systems:

AMEC will continue engineering, procurement, and construction activities on the Mill Creek and Trimble County PWS projects. B&McD will continue progressing their engineering, procurement and construction efforts on the Ghent PWS project. Both AMEC and B&McD, along with the Companies and the Companies' OE, will continue reviewing engineering designs, procurement activities, and the design and fabrication of Suez (the treatment technology supplier) at all three stations (Ghent, Mill Creek, and Trimble County). MAC Construction will continue constructing the Trimble County PWS ponds.

### **E.W. Brown Landfill Phase II**

Thalle will complete their mobilization to the site.