

Air Quality Advisory Committee

September 16, 2020

Agenda

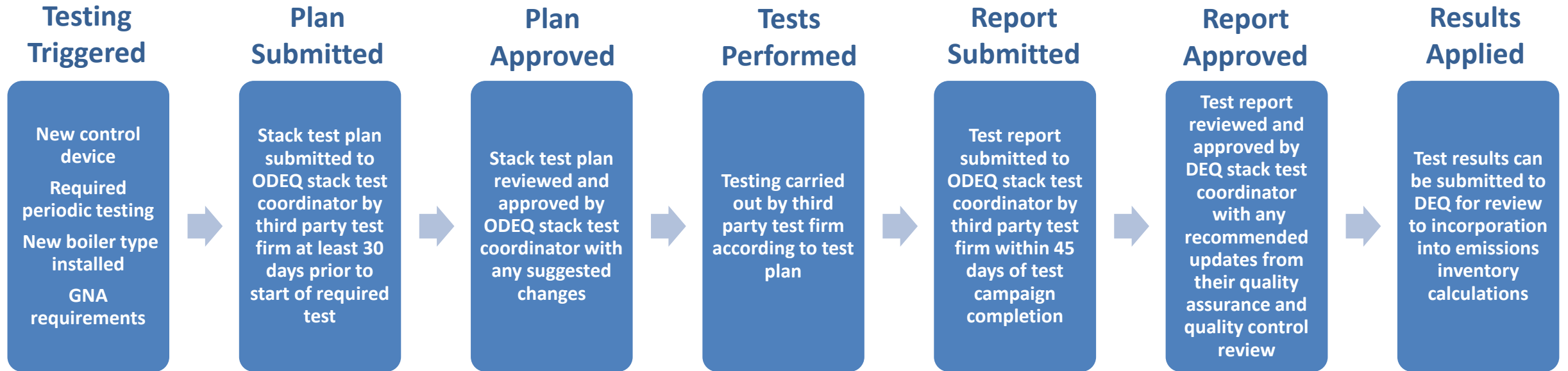
1. Welcome/Introductions
2. Recap of previous meeting
3. Community Opens
4. AQAC Opens
5. Stack Testing Overview
6. Good Neighbor Agreement Items Update
7. Agenda for next meeting
8. Public comments/questions

STACK TESTING INTRODUCTION

Stack Testing Overview

- Why does Intel perform stack testing?
 - Confirm compliance with Best Available Control Technology (BACT) emission limits- example: Rotary Concentrator Thermal Oxidizer (RCTOs), Boilers
 - Determination of RCTO control efficiencies of volatile organic compounds (VOCs)
 - Development of emission calculations for fluorides and hydrogen fluoride from scrubbers
 - Good Neighbor Agreement Attachment B requirements
- Stack testing performed by a certified 3rd party stack testing firm
- Stack testing plans are reviewed and must be approved by Oregon DEQ prior to testing, and utilize standard EPA and/or DEQ test methods

Stack Test Process



Stack Testing Results



Measure stack flow rates



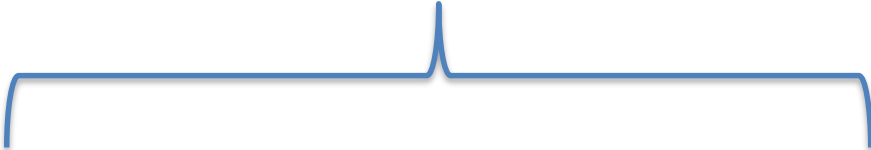
Pollutant specific methods provide concentration



Flow rate x concentration = emission rate

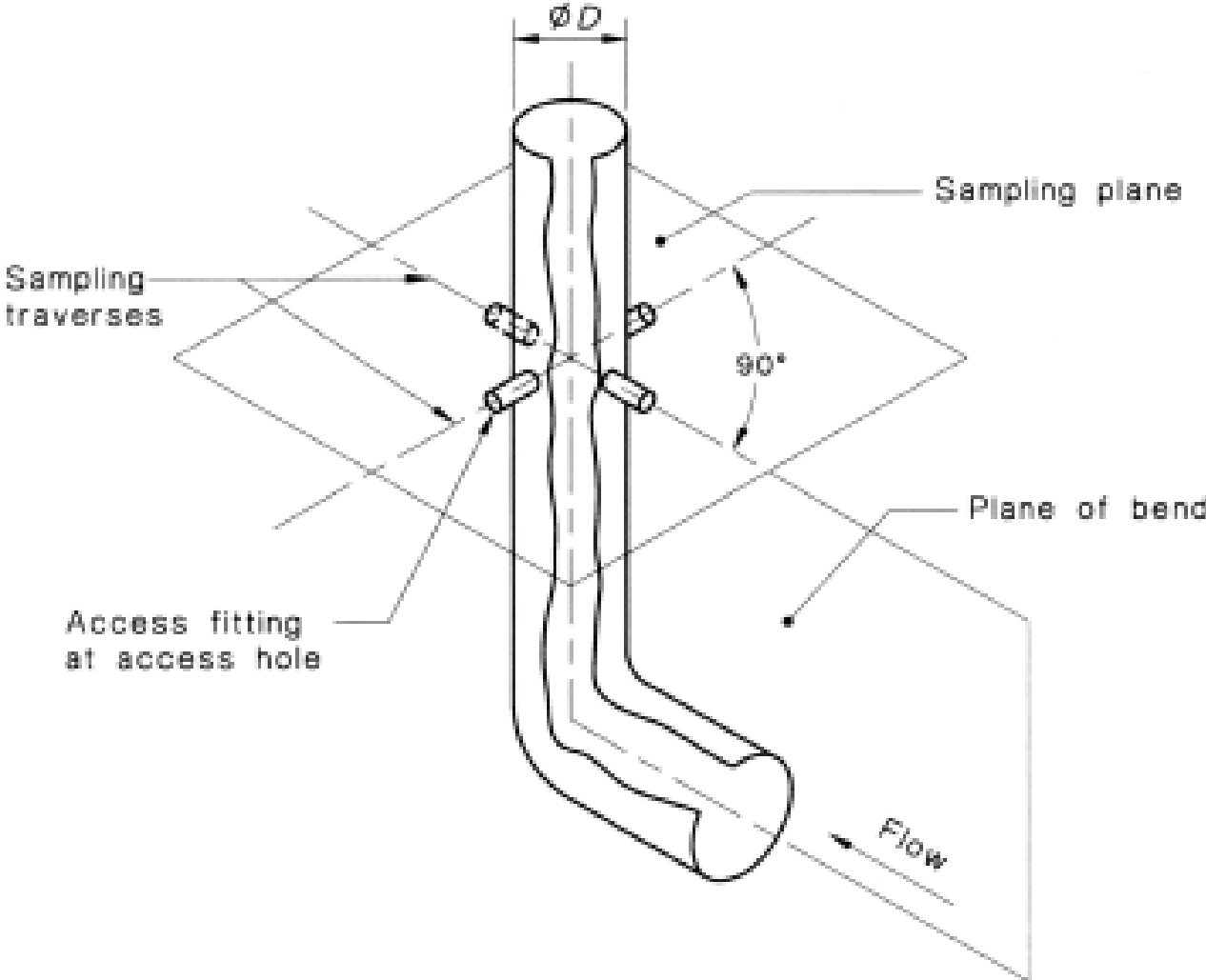


Tests require calibrations and post-test checks

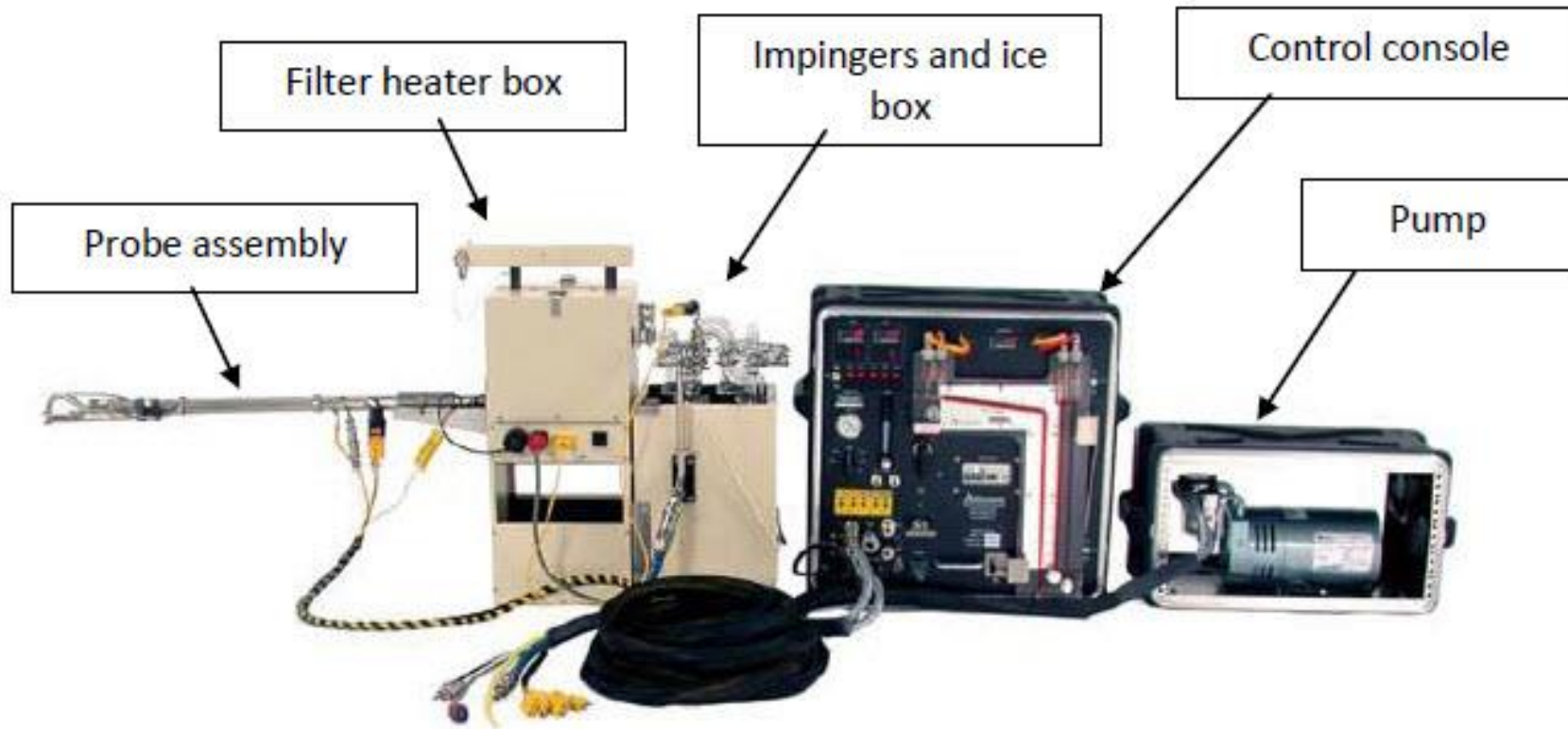


Pollutant	Standard Method(s)
Oxides of Nitrogen (NO _x)	FTIR
Carbon Monoxide (CO)	FTIR
Fluorides	EPA RM13B
Volatile Organic Compounds (VOCs)	EPA RM25A
Hydrogen Fluoride (HF)	FTIR

Port location details



Typical Sample Train



Test Equipment

Test Probe



Filter & Assembly



Impingers



Example of Test Trailer with Instruments & Calibration Gasses



QUESTIONS?

GNA-Specified Agenda Items

- Intel to report to the AQAC at its quarterly meetings on:
 - Stack testing completed since the last AQAC meeting, any stack testing planned before next AQAC meeting,
 - Annual or semiannual reports submitted by Intel to DEQ pursuant to Intel's air permit.
 - Any requests to DEQ for authority to modify emission factors or emission sources that were submitted since the last AQAC meeting or that Intel anticipates will be submitted prior to the next AQAC meeting;
 - Update on the implementation of the measures identified in Attachment A and any measures raised in prior AQAC meetings that require further action or consideration;
 - Any excess emissions and upsets reported to the Department during the most recent calendar quarter

2020 Stack Testing Plan

- 2020 Stack testing activities
 - Determine removal efficiency of volatile organic compounds (VOC)
 - Demonstrate compliance with best available control technology (BACT) limits for NOx and CO
 - Recurring RCTO stack testing for D1X-RCTO-5
 - September 30th, 2020
 - Recurring RCTO stack testing at Aloha (F15) units 1 & 2
 - October 5th & 6th, 2020
 - Initial RCTO stack testing of Aloha (F15) unit 3
 - October 7th, 2020
- DEQ and AQAC committee members can be onsite and witness testing events
 - Due to Covid-19 precautions, visits are severely restricted

Continuous Emissions Monitoring System Overview

- Rotor Concentrator Thermal Oxidizer (RCTO)
 - Used to control emissions of VOCs
 - Method of control: Thermal oxidation (combustion)
 - Temperature = Key operating parameter
 - Measurement via thermocouple
 - Minimum temperature established during stack testing
 - Temperature measurements are reviewed on an ongoing basis
 - Alarms are also set to alert when measured value outside the acceptable range
 - Alarms are indication of off-spec operation, not an indication of excess emissions or bypass

Continuous Emissions Monitoring System Overview

- Wet Scrubbers
 - Used to control emissions of acid gases, primarily Fluorides, HF, and HCl
 - Method of control: pH adjusted water absorption
 - Water flow rate and pH = Key operating parameters
 - Measurements via pH probe and flow meter
 - Minimum pH and flow established during stack testing
 - Measurements are reviewed on an ongoing basis
 - Alarms are also set to alert when measured value outside the acceptable range
 - Alarms are indication of off-spec operation, not an indication of excess emissions or bypass

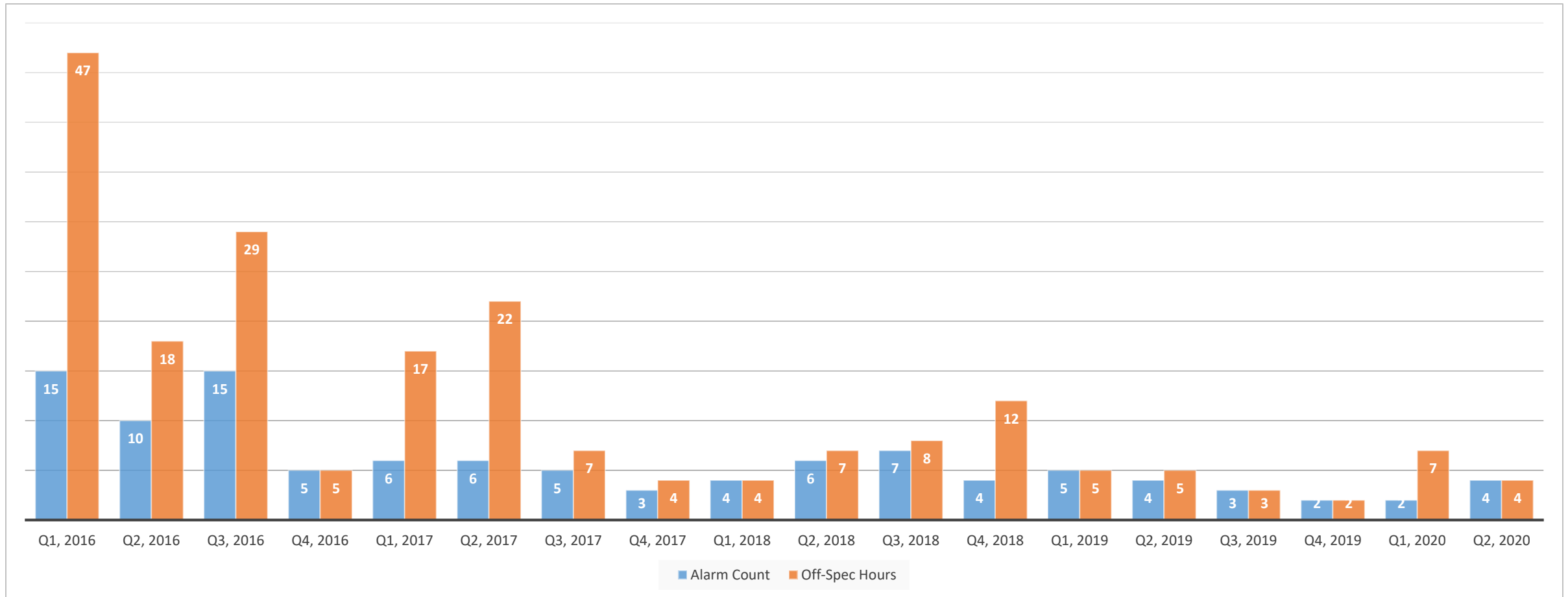
Continuous Emissions Monitoring Report

– Q2, 2020

Attachment C

Source	Frequency	Parameter	Equipment	Q2, 2020 Report
Rotary Concentrator Thermal Oxidizers (RCTO)	Continuous	Temperature	Thermocouple	3 low temp events
Acid Gas Scrubbers	Continuous	Flow pH	Flow Meter pH probe	1 low flow event
Emergency Generators	When used	Hours of operation including time of engine start, time of engine stop and reason for operating		No issues

Continuous Emissions Monitoring Report



- Normal hourly operations for Q2, 2020 is over 99.99%
 - Off-spec operation is not an indication of excess emissions and was limited to <0.01% of the hours for Q2, 2020
- Blue bars indicate the number of alarms per quarter
- Orange bars indicate the number of hours outside of normal operation per quarter

DEQ Submittals

- Emission Factor Update Submitted on August 28, 2020
 - Updated HF EFs based on recent stack testing event
 - DEQ approval received on August 31st

Agenda for Next Meeting

November 4, 2020 (Q4, 2020)

- AQAC members to have input into the next agenda for each AQAC meeting
 - Standing agenda items
 - DEQ Submittals
 - Stack Testing Update
 - Project Update
 - Other
 - Others?

Public Comments/Questions

BACKUP

Attachment A

Emission Reduction Project	Target Date	Status / Method of Confirmation
Advocate to contractors working at the Facility to use newer onroad and nonroad diesel engines	2 nd quarter 2016	Ongoing collaboration with suppliers to encourage reductions
Evaluate ways to reduce (if possible) diesel particulate matter emissions either with onsite or offsite projects	3 rd quarter 2016	Reported out during Q3, 2016 AQAC quarterly meeting
Decommission four Fab 5 boilers	3 rd quarter 2016	Completed
Assess feasibility of reducing waste tank emissions	4 th quarter 2016	Completed
Retrofit RCTOs to optimize natural gas usage	2 nd quarter 2017	Completed
Boiler replacement with ultra low-NOx burner boilers at RA2 and RP1	3 rd quarter 2017	Project completed. Report out during Q3, 2017 AQAC meeting
Compare actual emissions inventory in 2020 to inventory used in HRA	2 nd quarter 2021	Report to AQAC at quarterly meeting