Refrinery Wastewater Reuse and Fresh Water Preservation in New Mexico to Support Oilfield Production

By
R. Combs, R. Boans – HFNR
C. Chavez, E.J.S. Graham – EMNRD OCD

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HollyFrontier Navajo Refining

- HollyFrontier Navajo Refining
  - Began in 1920s
  - Holly Corp 1969
- HollyFrontier Corporation
  - One of five HollyFrontier refineries
  - Total refining capacity of 460,000 bpd
  - Headquartered in Dallas, TX
- Navajo – Artesia/Lovington
  - 100,000 bpd crude capacity
  - Local Permian gathering

Public Policy in NM: [https://ballotpedia.org/Fracking_in_New_Mexico](https://ballotpedia.org/Fracking_in_New_Mexico)

Refinery Regulatory

- Permitting
  - POTW – Cities of Artesia & Lovington
  - NM Environment Department
  - NM Office of State Engineer
  - Oil Conservation Division
Refinery and Oilfield Activity Location

- Arid location
- Annual Average Rainfall
- Limited surface water for demands
- Limited fresh water rights
- Competing demand for water
  - Municipal
  - Agriculture
  - Oilfield
- Heavily dependent on water
- Integrated processes
- Internal recycle streams
- Refinery Performance
- Evaluating further reuse options to improve efficiency

Refinery Water Use

- Sour Water
- Steam Supply
- Refinery Process
- Makeup Water
- Waste Water
- Cooling Water
- Disposal
Benefits of Reuse

- E&P
  - Reduce costs
  - Pipeline/Continuous Delivery
  - Preserve freshwater resources
- Refinery
  - Longevity for refinery
  - New partnerships
  - Revenue
Oilfield Demand

- Oil and Gas well drilling fluids
- Hydraulic fracturing
- Downhole operations

Volumes:
- 1.1 MG/well (Eddy Cty) – avg frac volume

New Mexico Oil & Gas Rigs Since 2000

OCD Online: http://www.emnrd.state.nm.us/OCD/education.html
BakerHughes Rig Count: http://phx.corporate-ir.net/phoenix.zhtml?c=79687&p=irol-reportsother
Reuse Considerations

- Demand – will the trend continue?
- Refinery liability
  - Water quality
    - Very consistent
    - Discharge – Batch operation
    - Regular quality testing
- Delivery
  - Plant upset, mechanical failure, etc.
  - Weather
- Contracts and Procurement
  - Define purchaser responsibilities
  - Payment
- Purchaser Responsibilities
  - Partners with good practices and financials
  - Broker to third parties
  - Commitment

Permian region is expected to drive U.S. crude oil production growth through 2019

Source: U.S. Energy Information Administration, Short-Term Energy Outlook, August 2018
Due diligence of purchaser

Regulatory
- NMOCD
  - Permitting
  - Oilfield non-exempt non-hazardous waste water stream
- City of Artesia
- OSE
- Contracts
Purchaser Responsibilities

- Regulatory - Purchaser
  - Managing refinery waste stream
  - NMOC D
    - Permitting – Reuse/Recycling
    - Reporting
    - Release Notification
      - Investigation/cleanup
    - Disposal
- Rights of way – surface access
- Deconstruction/demobilization
In Summary

* Beneficial reuse program
* Pollution and waste minimization
* Implementation

For more info, contact:

Robert Combs – HollyFrontier Navajo Refining LLC
robert.combs@hollyfrontier.com, 575-746-5382

Carl Chavez – EMNR – OCD
CarlJ.Chavez@state.nm.us, 505-476-3490