Stormwater Quality
A Matter of Sustainability
Water Quality Facilities in the North Diversion Channel Watershed

WESTCAS 2010 WINTER CONFERENCE

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Bohannan Huston Inc.
BHI – Community Partner since 1959

Engineering
Spatial Data
Advanced Technologies

Visualize Optimize Realize

△ Water Resources
- Hydrology & Hydraulics
- Water & Wastewater
- Reuse
Water Quality Facilities in the North Diversion Channel Watershed

▲ NDC Watershed
▲ EPA Permit – MS4
▲ Four Generations of Water Quality Facilities
▲ Examples
  – South Pino
  – Alameda Storm Drain Outfall
  – North Domingo Baca
  – North Pino
▲ Current Water Quality Initiatives
North Diversion Channel Watershed
NDC Drainage Facilities
EPA MS4 Permit – Early Mandates

Four co-permitees
- AMAFCA
- City of Albuquerque
- NM Department of Transportation
- UNM

Governs storm water quality in the North Diversion Channel
- Gross Debris/Pollutant Removal
- Bacteria Reduction
Gross Pollutant Study
Debris Characterization by Volume

Large Natural Material 51.0%
Plastic 16.0%
Fabric and paper 1.6%
Metals 1.3%
Lumber 3.5%
Cigarette Butts 6.4%
Other 3.2%
Small Natural Material 17.0%

AMAFCA/Albuquerque MS4 Floatable & Gross Pollutant Study, October 2005
South Pino Arroyo Water Quality Facility 2001 – 1\textsuperscript{st} Generation Facility

\begin{itemize}
  \item Safety concerns & maintenance issues
  \item Minimal treatment of bacteria
\end{itemize}
Alameda Storm Drain Outfall 2002 – 1st Generation Facility

- Traps floating debris
- Requires regular & frequent maintenance
- No treatment of bacteria
N. Domingo Baca Water Quality Facility
2001 – 2\textsuperscript{nd} Generation Facility

\begin{itemize}
\item Project
\item Issues
\begin{itemize}
\item Unlined channel
\item Erosion & Sediment Transport
\item Safety concerns
\item Water Quality Improvements
\end{itemize}
\end{itemize}
N. Domingo Baca Water Quality Facility
2001 – 2nd Generation

▲ Project Accomplishments

– Replaced channel with buried storm drain
  • Eliminating erosion & sediment transport
  • Improving safety

– Water Quality Improvements
  • Innovative first flush capture
  • Sediment & Debris Removal
  • Floatable Capture
  • Secondary Bacterial Treatment via sand filter
N. Domingo Baca Water Quality Facility
2001 – 2nd Generation Facility
N. Domingo Baca Water Quality Facility
2001 – 2nd Generation

▲ Project Overview
– Innovative first flush capture
N. Domingo Baca Water Quality Facility
2001 – 2nd Generation

▲ Sediment & Debris Pond
N. Domingo Baca Water Quality Facility
2001 – 2\textsuperscript{nd} Generation

▲ AMAFCA
Standard
Ported
Riser
traps
floatables
N. Domingo Baca Water Quality Facility
2001 – 2nd Generation

▲ Sand Filter Basin
  – Secondary Bacterial Treatment
  – Extended detention
N. Pino Water Quality Facility 2003 – 3rd Generation

▲ Project Accomplishments

– Debris Intake Structure
  • Modifications to existing channel
  • HEC-RAS modeling
  • Physical Model by UNM Hydraulics Lab

– Debris Removal Structure
  • Hanging baffle & weir wall
  • Easy maintenance access

– Extended Wet Detention Pond
  • Permanent Pool
  • Extended detention allows sunlight to breakdown fecal coliform
  • Controlled release back to N. Pino Channel
N. Pino Baca Water Quality Facility
2003 – 3rd Generation
N. Pino Baca Water Quality Facility
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2003 – 3rd Generation

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• Permanent Pool
• Extended detention allows sunlight to breakdown fecal coliform
• Controlled release back to N. Pino Channel
N. Pino Baca Water Quality Facility
2008 – 4th Generation Retrofits

▲ Coanda Screen Installation
Over New Clean Water
Gallery
N. Pino Baca Water Quality Facility
2008 – 4th Generation Retrofits

▲ Coanda Screen in Operation
N. Pino Baca Water Quality Facility
2008 – 4th Generation Retrofits

▲ Discharge from Debris Removal Structure

06/27/2008
AMAFCA NDC Water Quality Project 2009-2010

Daniel B. Stephens & Associates with Tetratech and BHI

- Task 1: Hydraulic Modeling of NDC Outfall
- Task 2: Dissolved Oxygen/Water Quality Study
- Task 3: NDC Tributary’s Gross Pollutant BMPs
- Task 4: NDC Gross Pollutant BMPs
NDC Water Quality Project 2010

▲ Task 3 (ongoing): NDC Tributaries Gross Pollutant BMPs
- Candelaria Outfall
- Hahn Arroyo
- Grantline Channel
NDC Water Quality Project 2010

▲ Task 4 (pending): NDC Gross Pollutant BMPs
- Balloon Fiesta Park
- Outfall to Rio Grande
A Final Thought:

The ABCWUA Drinking Water Project Diversion Dam is 2 ¼ miles downstream from the North Diversion Channel Outfall.