

SMRID Aquatic Weed & Algae Control Structures

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 - E.D. Marketing Enterprises
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ACKNOWLEDGEMENTS

ST. MARY RIVER IRRIGATION DISTRICT

- Canada's largest irrigation district >372,000 ac.
- 2000 km of canals and pipelines
- 5 major off-stream reservoirs – 307,000 ac-ft.
- Agricultural, domestic and industrial water
- Wildlife habitat, recreation, hydro-electric power

AGENDA

- The Program
- Current Installations
 - Gabion Wall
 - Floating Net Boom
- Planned Installations
 - Infiltration Gallery

SMRID Aquatic Weed & Algae Control Structure Program

- IRP funded
 - Added to current IRP projects
 - Separate “Retrofit” Program
- Risk Reduction
 - Risk of sudden clogging
 - Risk of loss of Magnicide H
- Long Term Solutions
 - Low capital and maintenance costs
 - Reliable
 - Durable
 - Consistent with reduced/alternate chemical inputs

SMRID Aquatic Weed & Algae Control Structure Program

➤ Site Selection Process

- Survey and Rating of Problem Areas
 - Site visits with water supervisor
- Prioritization and Potential Solutions
 - Review with O&M
- Balancing East and West Areas
- Final Selection
 - Confirm with O&M

SMRID Aquatic Weed & Algae Control Structure Program

➤ Design Process

- Investigate weed/algae loading, hydraulics and physical siting and retrofit constraints
- Brainstorm alternatives
- Eliminate non-feasible alternatives
 - Hydraulic, siting, economics
- Refine remaining alternatives
- Select best alternative

SMRID Aquatic Weed & Algae Control Structure Program

➤ Alternatives under Consideration

- Passive

- Infiltration Wall (eg. Gabion Wall)
- Infiltration Gallery (bed or bank-mounted)
- Floating boom (net boom, debris boom)
- Deflector
- Static Screen/Rack
- Turnout Widening

- Active

- Brush/scrapper screeners (up the bank/side sweep)
- Travelling Screens

Current Installations

Gabion Walls
Floating Net Boom



Gabion Wall – Chin Lateral 7

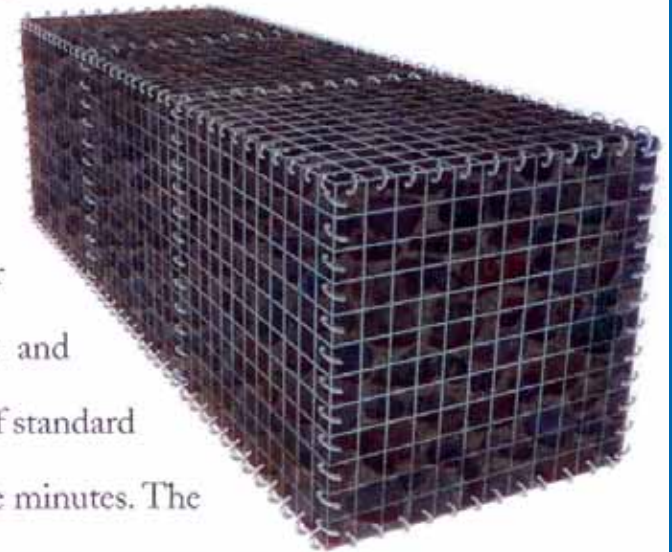


- Narrow dead-end canal with existing screener & pipeline
- Centered Z-shape to maximize area, minimize velocity
- Weeds accumulate in NE corner
- Buttresses to stabilize long reach

Welded Wire Gabions

Atlantic Welded Wire Gabions

Atlantic Welded Wire Gabions, in 83 millimetre x 83 millimetre galvanized mesh, can be pre-assembled in standard or site-specific sizes, or can be field-cut to any size without losing strength. Pre-assembled units are fastened together with galvanized spirals so no flattening, bending, or folding is required in the field, saving installation time and expense. Sides are simply raised and connected. Assembly of standard units, up to 6 metres x 2 metres x 1 metre, takes about five minutes. The strong and lightweight galvanized mesh allows machine filling, holds the alignment of the face, and ensures ease of installation.



Atlantic Industries Limited

For more information, visit our Web site at www.ail.ca



Welded Wire Gabions



STIFFENERS



TOP VIEW

SPIRAL CONNECTOR



ROLL STOCK

Gabion Wall – WMH 18 & 20



- Dead-end canal with existing pipeline & turnout
- Extensive algae problem
- Bent L-shape to maximize area, minimize velocity & install buttresses
- Weeds accumulate in NE corner

Gabion Wall – Yellow Lake Lateral 4

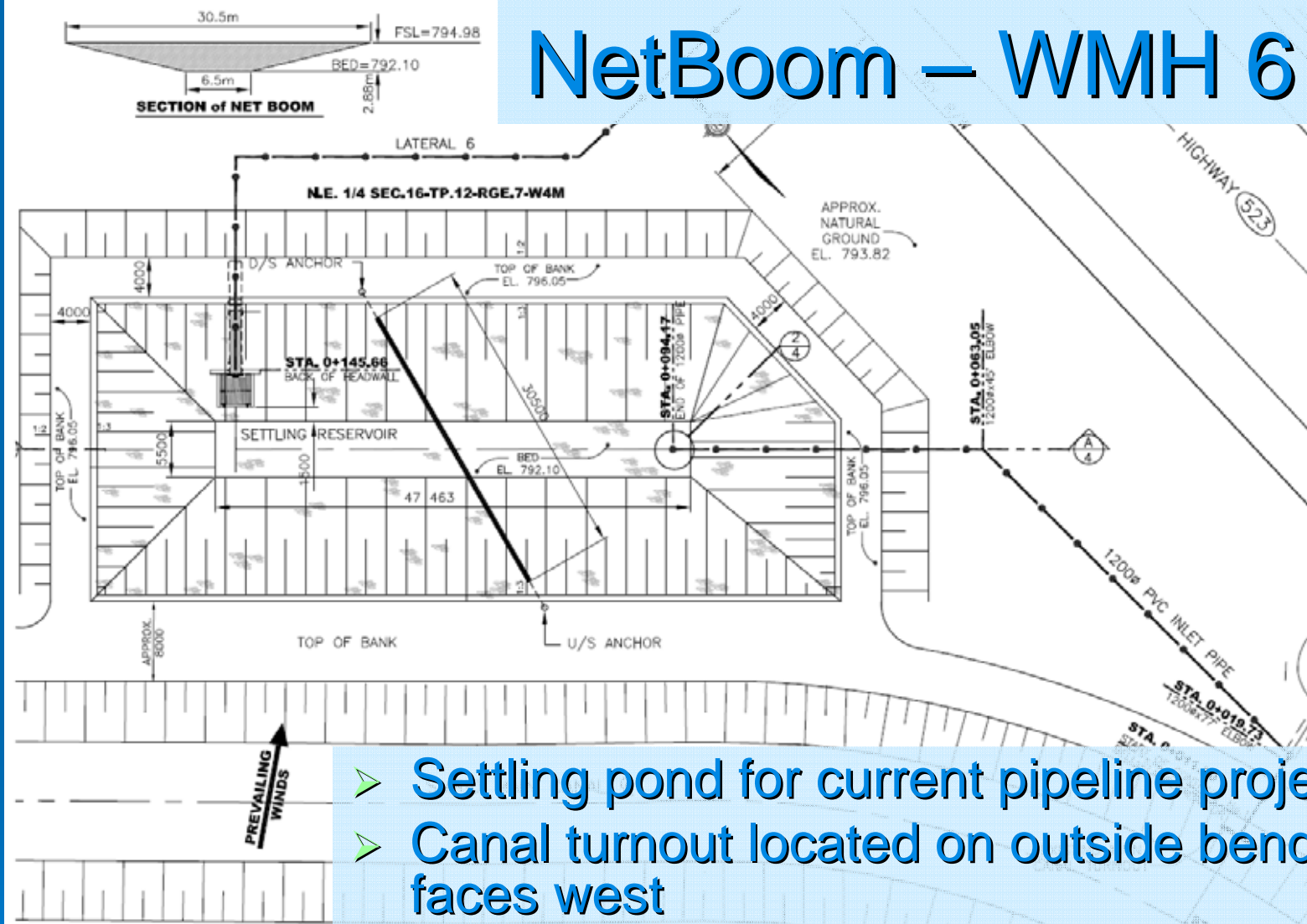


- Settling pond for current pipeline project
- Canal turnout located on outside bend faces west
- Z-shape to maximize area & minimize velocity
- Weeds accumulate in NE corner
- Main wall offset with buttresses on settling side

Gabion Wall – Yellow Lake Pump Site

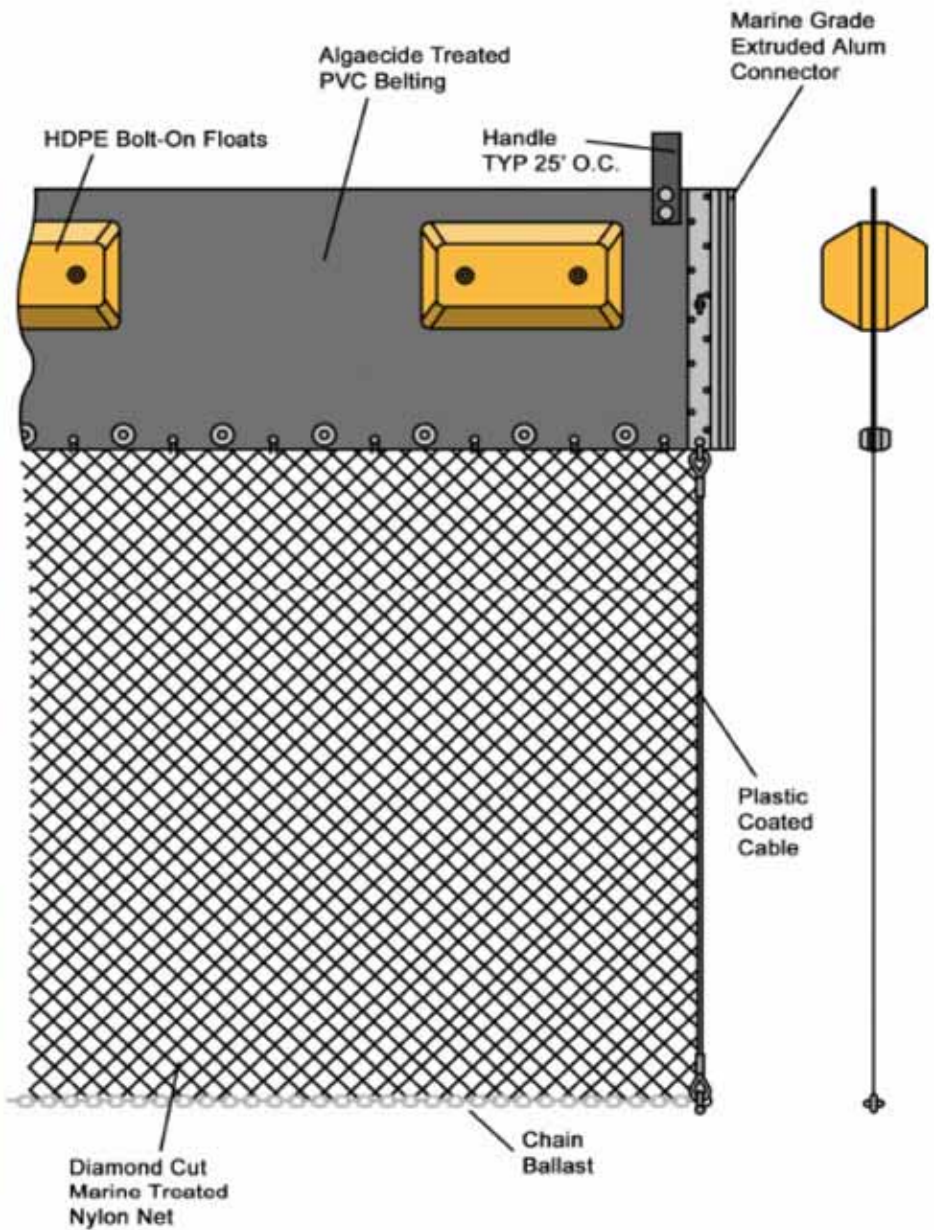
- Pump intake for N. Grassy and N. Burdett canals
- Bent rectangular shape to center in bay
- Larger factor of safety on sizing
- External buttresses for unrestricted flow to intake

NetBoom – WMH 6



- Settling pond for current pipeline project
- Canal turnout located on outside bend faces west
- Water table issues
- Weeds accumulate in NE corner

NetBoom



Planned Installations

Infiltration Galleries
Deflectors

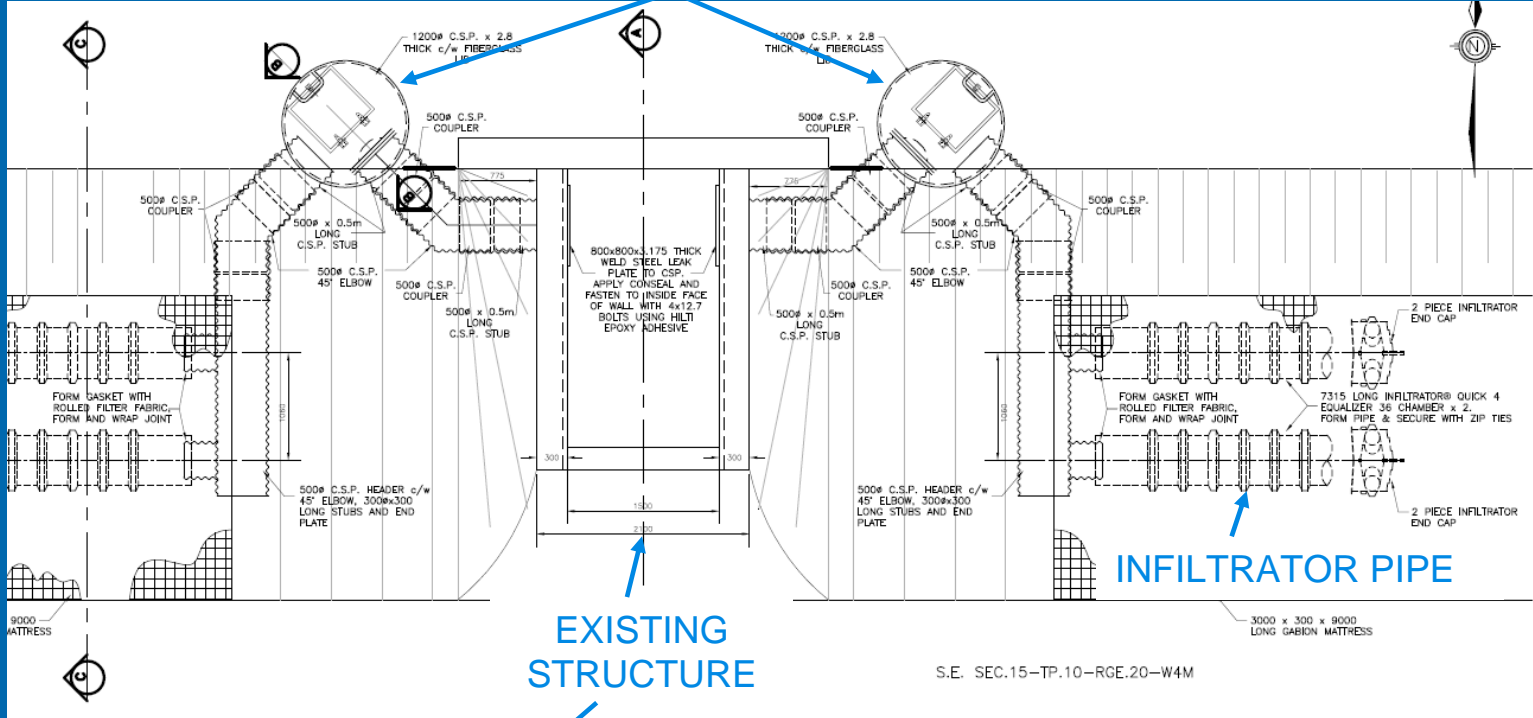


Infiltration Gallery – North Lateral

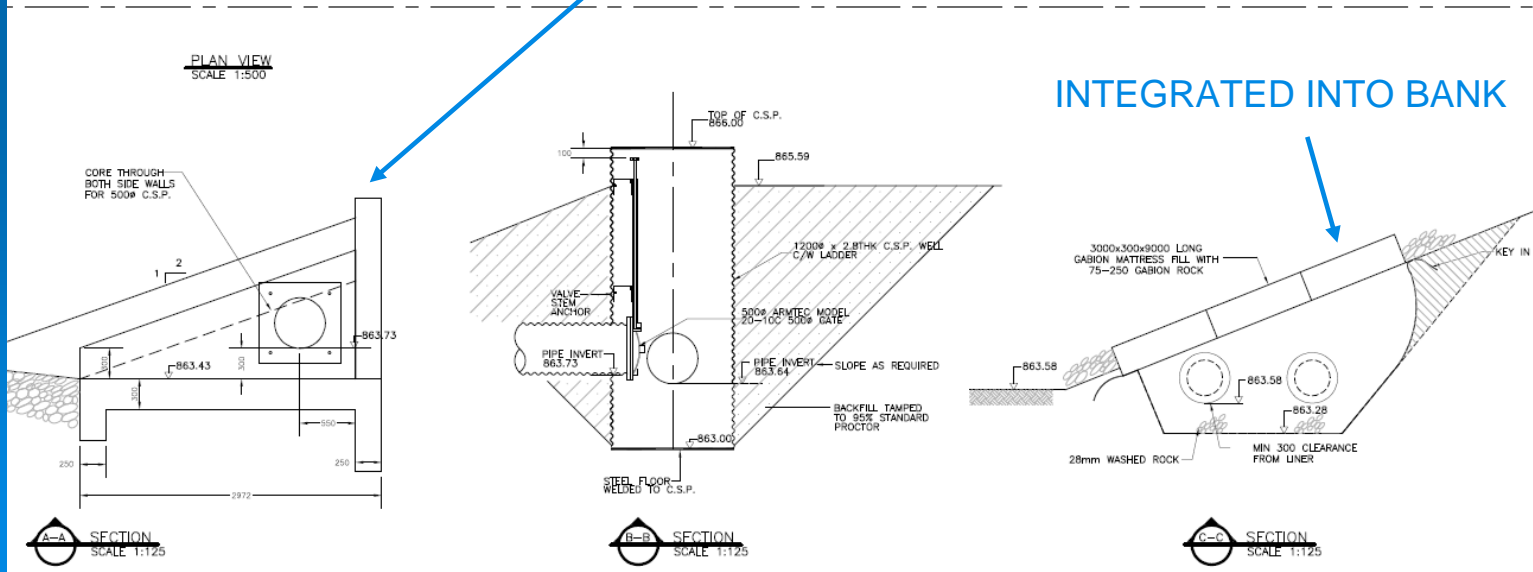


- Small pipeline currently with a deflector and three screens
- Planned addition of u/s and d/s bank-mounted, low-head, high capacity infiltration galleries to bypass the canal deflector & trash rack
- Tie-in to existing canal turnout – adding capacity
- Observation/backwash systems to be integrated
- Length limited to distance to d/s check and axial velocity

OBSERVATION & BACKWASH WELLS



PLAN VIEW



INTEGRATED INTO BANK

SECTION



Infiltration Gallery – North Lateral



INFILTRATOR PIPE



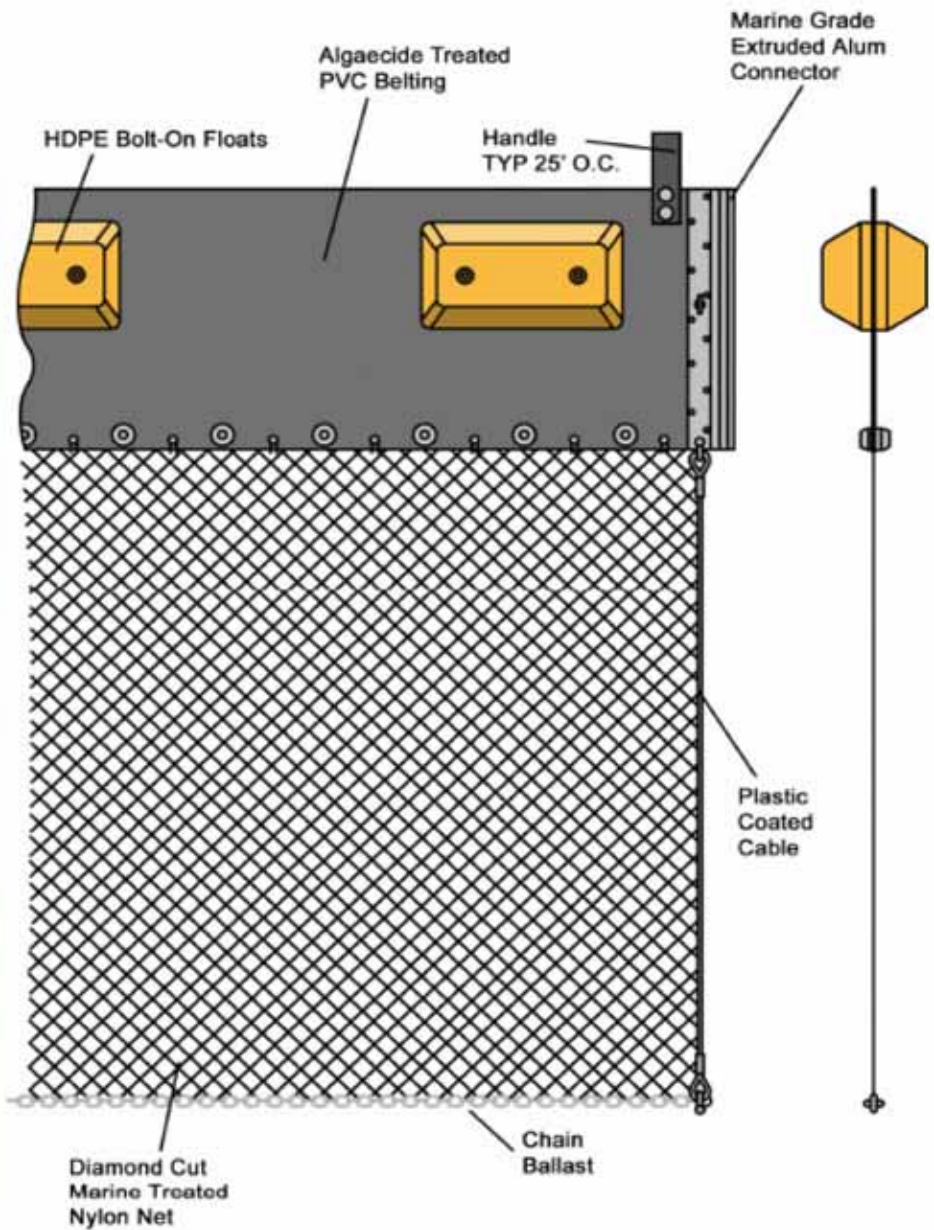
BACKWASH TANK

Deflector – Cameron Extension



- Existing flow-through settling pond
- High Sedimentation Rate
- Large submerged pipeline inlet
- Proposed NetBoom Deflector to protect inlet

NetBoom



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