ARCADIS Design & Consultancy for natural and built assets

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

New York State Department of Environmental Conservation

LEVEE PIPE ABANDONMENT SUMMARY

Well 1-1A Treatment Plant Blow-off Pipe

Site 7-09-009A

July 2016

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Prepared for:

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Date: July 2016

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ACRONYMS AND ABBREVIATIONS

MJ	Mechanical joint
NYSDEC	New York State Department of Environmental Conservation
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
SOP	Standard operating procedure
VOC	Volatile organic compound

1 INTRODUCTION AND BACKGROUND

1.1 Introduction

The New York State Department of Environmental Conservation (NYSDEC) issued a Work Assignment (# D004443-4) to Arcadis CE, Inc. (Arcadis) for Operation, Maintenance, and Monitoring at the Vestal Water Supply Site (site) in New York State (Site # 7-04-009A) (Figure 1). Arcadis has prepared this report to summarize site activities related to abandonment of an unused blow-off pipe that passes through the flood control levee for the Susquehanna River.

1.2 Background

The site contains a former groundwater well pump station and chlorination station that was previously used for the Town of Vestal municipal water supply. The well has been impacted by volatile organic compounds (VOC). In 1995, the United States Environmental Protection Agency (USEPA) converted the well, pump house and chlorination system to include a packed bed air stripping tower to address the VOC contaminants. The well and treatment plant are currently off-line.

An 8–inch iron discharge pipe formerly served as a blow-off and bypass line so that water from the Well 1-1A pump house or treatment plant could bypass a State Flood Management Area and be discharged directly to the Susquehanna River. The blow-off pipes exit the pump house and treatment plant below grade, wye together and pass through a flood control levee that is regulated by the NYSDEC Region 7 Division of Water and United States Army Corps of Engineers (USACE). The pipe then extended down the levee embankment to the bed of the Susquehanna River (Figure 2).

The discharge pipe was no longer used and, per the NYSEC Region 7 Division of Water, required to be abandoned and grouted in place in accordance with the USACE Standard Operating Procedure (SOP) to Abandon and Seal an Existing Pipe (USACE, September 2011) (Attachment A). NYSDEC Region 7 also requested to have the above-grade piping that extended from the levee headwall down the levee embankment to the Susquehanna River, removed and disposed.

At the request of NYSDEC, Arcadis prepared a draft Scope of Work (Scope) detailing the pipe abandonment procedures. The draft Scope was submitted to NYSDEC for review and concurrence with USACE on April 8, 2016. Arcadis revised the Scope based on comments received from Region 7 NYSDEC Division of Water and USACE and submitted the Final Scope on June 3, 2016.

2 LEVEE PIPE ABANDONMENT

Work to abandon the levee pipe was initiated on May 23 and completed June 23, 2016. Figure 2 shows the locations of the work areas. A Photograph log of the work areas is provided in Appendix B.

2.1 Utility Locating

SoftDig was contracted by Arcadis to identify, mark, and map on-site utilities prior to initiation of ground-intrusive activities. SoftDig marked the vicinity of the proposed excavation area on May 23, 2016. DigSafely NY was contacted for utility mark-outs on June 13, 2016. The associated Ticket Number is 06136-139-063.

2.2 Surface Piping Removal

On May 23, 2016, Arcadis and NYSDEC Operations staff removed approximately 52 feet of 8-inch above-ground blow-off piping and fittings between the levee headwall and the Susquehanna River. The pipe was removed from the levee embankment using Operation's excavator, cut into lengths of approximately 10 feet and loaded into Operation's dump truck for off-site disposal. One section (approx. 20ft) of 8-inch pipe still remains along the bank of the River and extends beneath the water surface. This section of pipe remained firmly in place as the excavator pulled the other sections of pipe away. It is suspected that the discharge point of the pipe is connected to a concrete structure at the base of the Susquehanna River. Due the slope of the river bank, the exposed portions of the pipe could not be accessed to be cut and removed.

A new 8-inch mechanical joint (MJ) cast iron cap, retaining flange, and gasket was installed to seal the blow-off pipe at the levee headwall in preparation for grouting.

2.3 Pipe Grouting

On June 20, 2016, Arcadis excavated, exposed, and removed an existing stand-pipe that connected to the 8-inch blow-off pipe. As shown on Figure 2, the standpipe connection with the 8-inch blow-off pipe was between the pumphouse and levee embankment, immediately adjacent to the perimeter fencing for the pumphouse and treatment plant. The stand pipe was no longer required for treatment plant operations and, once removed, served as an access point to grout the blow-off pipe extending through the levee. The materials excavated to expose the standpipe consisted of poorly-sorted silt to coarse gravel with cobbles and occasional boulders. The material was firm and dry. The total depth of the excavation was approximately three feet. The materials were segregated based on the type of material (i.e. sod, gravel, etc.) and staged for re-use as backfill and restoration. The limits of the excavation were marked and barricaded at the completion of each work day while excavation remained open. No anomalies or additional sub-surface utilities were encountered during the excavation.

An 8-inch MJ cast iron cap, retaining flange, and gasket was installed to seal treatment plant blow-off piping where the stand-pipe was removed.

The total length of blow-off pipe extending though the levee embankment was measured to be 60 feet. The internal surface of the blow-off pipe was visibly coated with calcium carbonate precipitate. The precipitate adhered to the inside of the pipe and could not be readily removed. Therefore, the effective internal diameter of the blow-off pipe was measured to be approximately 7-inches. Based on these measurements, approximately 16 cubic feet (ft^3) of grout was the estimated volume of grout required to abandon the pipe.

Sika 212 grout was used abandon the blow-off pipe. The grout was mixed in accordance with the manufacturer's specifications and then pumped through a tremie-line using a grout pump. The one-inch tremie-line was inserted into the blow-off pipe at the former standpipe connection. The line was then passed through the blow-off pipe so that grout was discharged into the opposite (levee bulkhead) end of pipe. As the blow-off pipe was filled with grout, the tremie-line was removed. Once the blow-off pipe was nearly filled, the tremie-line was removed and a plywood form was bolted to the flanged end of the pipe. The tremie line was then placed through the hole drilled in the form and the remainder of the pipe was filled with grout. This deviated slightly from the final Scope; a larger form and grout plug was the original plan to ensure that the pipe was completely filled with grout. However, this assumed that the blow-off pipe would have been cut to and no flange would be present to attach a form. Therefore, since the blow off pipe still retained a MJ flange, a form could easily be bolted to the pipe and allow the grout to completely fill the pipe. As estimated, a total of 24 bags ($16ft^3$) of Sika 212 grout mixture was used to seal the blow-off pipe.

2.4 Backfill and Site Restoration

The excavated area was backfilled with the materials removed to expose the standpipe. The material was placed with an excavator bucket in loose, 6-inch lifts. Each lift was then compacted with a plate compactor until the excavation area conformed to the pre-existing grade. The excavation and disturbed areas were then graded, seeded with grass, and mulched.

At the request of NYSEC Region 7, additional seed and mulch will be placed on the levee embankment where the blow-off surface piping was removed. This work will be completed during the July 2016 monthly sampling event.

3 SUMMARY

At the request of NYSDEC Region 7, an unused bypass and blow-off pipe for the Well 1-1A treatment plant that passed through the flood control levee for the Susquehanna River was abandoned. The work was completed in general accordance with a NYSDEC and USACE approved Scope between May 23 and June 23, 2016.

Approximately 52 feet of pipe between the levee headwall and the discharge point in the Susquehanna River was removed and disposed off-site. One section (approximately 20 feet) of pipe could not be removed from the river bank and remains in place. A MJ cap was placed on the blow-off pipe at the levee headwall.

Prior to ground intrusive activities, on-site utility locating was performed by SoftDig and through the Dig Safely NY one call system.

A stand-pipe that connected to the blow-off pipe between the treatment plant and levee headwall was excavated and removed to provide access to grout the pipe.

Approximately 16 ft^3 of Sika 212 grout was pumped into the blow-off pipe through a tremie-line. A form was placed at the end of the blow-off pipe to ensure the pipe was completely filled with grout. The excavation was backfilled in 6-inch lifts and compacted until the original grade was restored. The disturbed areas of work were seeded with grass and mulched.

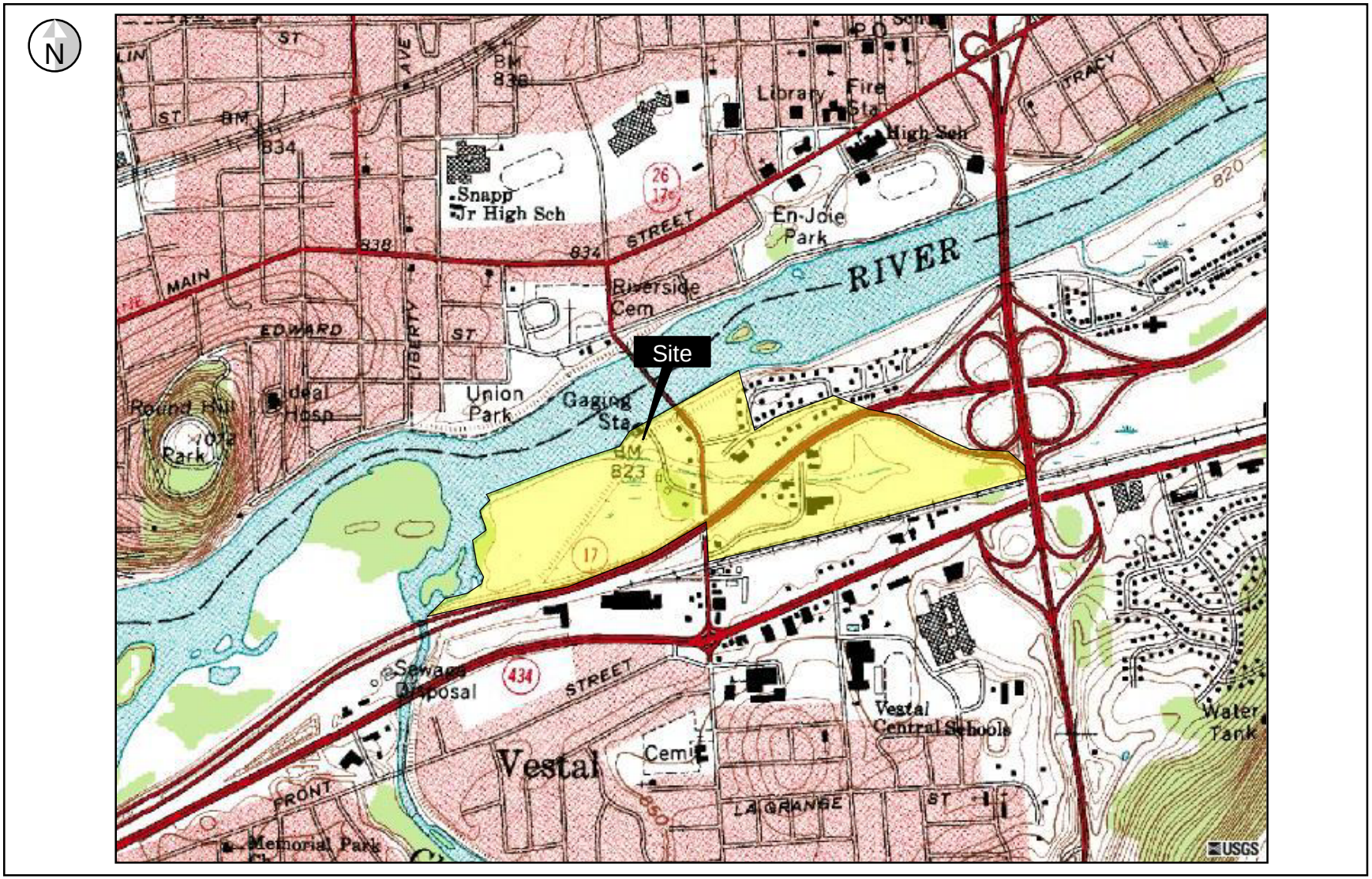
At the request of NYSDEC Region 7, Additional seeding and mulching will be completed in July 2016 along the levee embankment where the above-grade piping removal work was completed.

FIGURES

ARCADIS

Figure 1
Site Location
Vestal Water Supply Site
Vestal, New York
NYSDEC Site # 7-04-009A

0 2,000 ft



Source: USGS 7.5-minute Series Topographic Quadrangle, Endicott (1988).

G:\project\00266401.0000\file\reports\Figure 2-1.ppt

Pipe extending to Susquehanna River removed and disposed off-site with assistance from NYSDEC Region 7. Approximately 20 feet of pipe on the River bank could not be removed and will remain in place.

SUSQUEHANNA RIVER

STA 1+38.2
ELEV 834.80
36" REBAR

Installed new mechanical joint cap

LIMIT OF EXISTING 8" WELL DISCHARGE

INV. EL. 820.00

℄ DIKE

Excavated, removed, and discarded stand-pipe. Pressure grouted blow-off pipe with 16 cubic feet of Sika 212 grout. Backfilled excavation in loose 6-inch lifts. Compacted lifts and restored excavation with grass seed and mulch.

WELL 1-1A (AT TEST BORING LOC TB-2)

PUMP FOUNDATION

Approximately 60 ft

DRAIN STORAGE TANK

6" C.L.F.

UP

GV

OVERFLOW PIPE OUTLET

4" DRAIN PIPE

SEEDED AREA

SUMP PUMP DISCHARGE LINE

BLOW-OFF LINE

VCC REMOVAL FACILITY

6" GATE VALVE (OPEN)

6" BLOW-OFF PIPE

Installed new mechanical joint cap on treatment plant piping that is no longer used.

EXISTING SUMP PUMP DISCHARGE LINE (ABANDONED)

EXIST. WELL 1-1

WELL HOUSE 1 STORY BLOCK

SLOPE 1/4" = 1'-0"

GRAVEL DRIVE

8" FINISHED WATER PIPE

FENCE

8"GATE VALVE (CLOSED)

℄

10'-0

O.E.

BITU. PAVING

PLUG

8" RAW WATER INFLUENT PIPE

8" CARBON BED FACILITY CONNECTIONS

2" DIA PIEZOMETER (AT TEST BORING LOC TB-1)

10" WELL DISCHARGE

GUY WIRES

SURVEY BASELINE

PUMP HOUSE ROAD

12" OVER FLOW PIPE

EDGE OF ROADWAY

GRAVEL

EDGE OF ROADWAY

SIGN POST

SIGN POST

GE METER BOX

STA 0+00
ELEV 826.78
36" REBAR

834 833 832 831 830 829 828 827 826 825 824 823 822

20 0 20

SCALE IN FEET

SITE PLAN

THIS DRAWING PRODUCED ON AUTOCAD
DO NOT REVISE IT MANUALLY

U.S. ENVIRONMENTAL PROTECTION AGENCY

VESTAL WELL 1-1 SITE
BROOME COUNTY, VESTAL N.Y.

FIGURE 2

DETAILS OF BLOW-OFF (BY-PASS) PIPING TO WASTE

FOSTER WHEELER ENVIRONMENTAL CORPORATION
LYNDHURST, NEW JERSEY

CAD FILE NAME: VW-26964.DWG DATE: 2/7/96
PLOT SCALE: 1"=20' TIME: 8:04 AM

FWB3R12.DWG

APPENDIX A

Standard Operating Procedure to Abandon and Seal an Existing Pipe

STANDARD OPERATING PROCEDURE
TO
ABANDON AND SEAL AN EXISTING PIPE

Revised 15 September 2011

Abandonment and sealing of pipes requires a USACE Levee System Permit and appropriate project plans and specifications are submitted with the permit application. In addition to the normal Levee Safety Team permit review, USACE Hydraulics and Hydrology staff will review these permits to ensure that any permanent pipe abandonment does not create any adverse flooding conditions.

Procedures and specifications to abandon in place an existing pipe shall be as follows: The existing pipe shall be cleaned and completely filled with a shrinkage-compensating grout. Cleaning the pipe maximizes the potential for a good bond between the host pipe and grout. Small quantity applications shall meet the requirements of ASTM C-1107 such as SIKA 212, Edoco Grout or approved equal (see information below for the Specs on these products). Large quantity applications shall be filled using 3000 psi sanded grout with a shrinkage compensating admixture such as SIKA Intraplast N, BASF Tetraguard AS20, or approved equal. The pipe shall be completely filled and the quantity of grout required to fill the pipe should be determined in advance to equal the volume of the inside of the pipe for its full length between the inlet and outlet headwalls. Filling of the pipe should be monitored and inspected to ensure the pipe has been completely filled for its entire length .

Edoco Grout:
http://67.192.65.138/weavecmsresources//c_TechData_sheets/TDS_Edoco2/E_NFNSGrout_TDS.pdf

SikaGrout 212 Grout:
http://www.sikaconstruction.com/tds-cpd-SikaGrout212-us.pdf

Sika Intraplast-N:
http://www.sika.ca/con-tds-intraplastn-ca.pdf

BASF Tetraguard AS 20:
http://www.basf-admixtures.com/en/products/shrinkage_reducing/tetraguard_as20/Pages/default.aspx

APPENDIX B

Photograph Log

Project Photographs

Description:

Blow-off surface pipe on levee embankment at head-wall connection (2015).

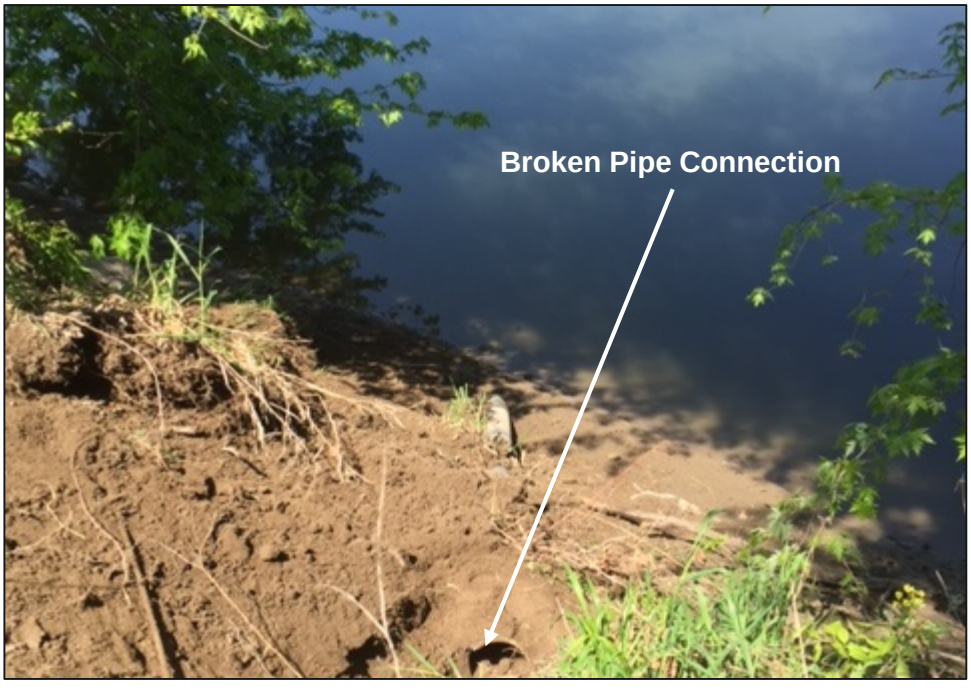
Description:

Blow-off surface pipe at river discharge (2015).

Project Photographs

Description:

Blow-off pipe at levee head-wall connection with surface piping removed and new mechanical joint cap installed.



Description:

Blow-off pipe at river discharge following surface pipe removal.

Project Photographs

Description:

Stand-pipe and connection with Blow-off pipe.

Description:

Blow-off pipe with stand-pipe removed.

Project Photographs

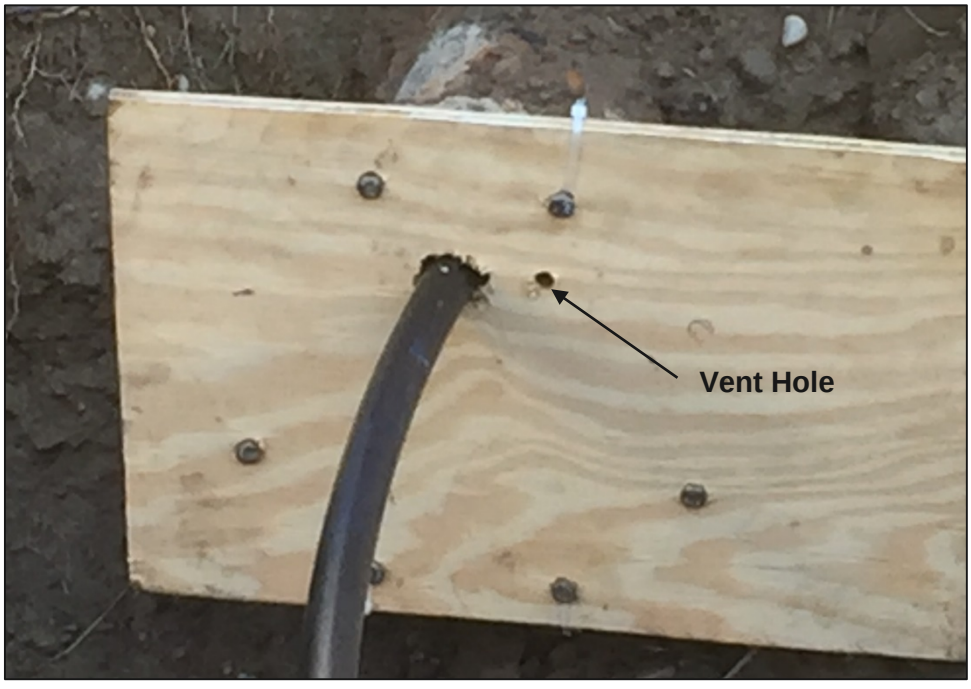
Description:

Blow-off pipe with MJ cap installed on treatment plant piping.

Description:

Blow-off pipe with plywood form installed. Tremie-line inserted through to of form into pipe.

Project Photographs



Description:

Plywood form with tremie-line inserted through hole drilled in top of form. Vent hole in form allowed air to escape while pipe was being filled with grout.

Description:

Grout batch being mix prior to pumping into blow-off pipe.

Project Photographs

Description:

Grout pump used to mix and deliver grout through tremie-line to blow-off pipe.

Description:

Compaction of backfill material.

Project Photographs

Description:
Final grading of excavation area.

Description:
Completed site restoration.

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