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July 29, 2004

Mr. John Helmeset, P.E.
New York State Department of Environmental Conservation
MGP Remedial Section
Bureau of Western Remedial Action
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7010

RE: Supplemental Remedial Investigation Work Plan
Delaware River Area
Port Jervis MGP Site
NYSDEC Site No. 03-36-049V
Port Jervis, New York

Dear Mr. Helmeset:

On behalf of our client Orange and Rockland Utilities (O&R), The RETEC Group, Inc. (RETEC) has prepared this Supplemental Remedial Investigation (SRI) Work Plan to present the scope of work and methods for completing additional investigation work in the Delaware River area of the manufactured gas plant (MGP) site located in Port Jervis, New York. O&R has completed extensive RI work at the Port Jervis site according to Work Plan documents prepared by GEI Consultants (RI/FS Work Plan, dated June 12, 2000) and Langan Engineering, Inc. (SRI Work Plan, dated April 7, 2003). Several additional investigation tasks need to be completed in the Delaware River area in order to complete the RI for the site. The scope of work and methods to be used for the remaining field tasks are presented below.

Scope of Work

The scope of work for the SRI includes the following:

- The completion of soil borings and the collection and analyses of subsurface soil samples in the river bank area;
- The installation of temporary well points at the soil boring locations along the river;
- The collection of groundwater samples from the temporary well points and the existing site monitoring wells;
- The probing of sediments in the river channel;
- The collection and analysis of sediment samples; and
- A survey of the new data points.

These tasks are described below.

Delaware River Bank Borings

Five subsurface soil borings will be completed along the Delaware River shoreline at the locations shown on the attached Figure 1. The objective of the borings will be to delineate the areal and vertical extent of impacted soil (if any) at these locations and to install temporary monitoring wells to sample groundwater in this area.

- **RBB1** – A boring will be completed adjacent to the Port Jervis storm sewer outfall. The boring will be completed to a depth of approximately 10 feet below ground surface (bgs). Two soil samples and one groundwater sample will be collected at this location.

- **RBB2** – A boring will be completed in the anticipated edge of the dissolved groundwater plume (if present) near the upstream base of the Route 209 Bridge. The boring will be completed to a depth of approximately 10 feet bgs. Two soil samples and one groundwater sample will be collected at this location.

- **RBB3** – This boring will be completed in the anticipated footprint of the dissolved groundwater plume. The anticipated depth of this boring will be 10 feet bgs; however, the boring may be completed to approximately 30 feet bgs should visible or PID screening evidence be observed in order to delineate the vertical extent of impacted soil and groundwater. Two soil samples will be collected at this location. If a 10-foot well is installed, then one groundwater sample will be collected. If a 30-foot boring is completed then three groundwater samples will be collected at target depths of 10, 20, and 30 feet bgs.

- **RBB4** – This boring will be completed in the predicted central axis of the dissolved groundwater plume area. The boring will be completed to a depth of 30 feet bgs. Two soil samples will be collected at this location and three groundwater samples will be collected from target depths of 10, 20, and 30 feet bgs.

- **RBB5** – This boring will be completed in the anticipated down stream edge of the dissolved groundwater plume area. The boring will be completed to a depth of 10 feet bgs. Two soil samples and one groundwater sample will be collected at this location.

River Area Boring Methods

The methods to be used for the soil borings are summarized as follows:

- A cathead mounted on a portable tripod will be used to advance the borings and temporary wells.

- Depending on drilling conditions encountered, a Winkie drill or skid-mounted rotary drill rig may also be used for turning augers, spinning casings, or coring through cobbles or boulders.

- The drilling equipment will either be mobilized to the shoreline from the dead end of the road immediately south of the study area, or brought to the site on a barge and carried to the shoreline.

- A floating oil boom will be placed in the river adjacent to each boring location to contain any hydrocarbon-like sheen or NAPL, if any, which may be mobilized into the surface water as a result of the drilling activities.

- Initially, an attempt will be made to push or pound a 3-inch diameter steel casing using the tripod and cathead to advance the borings at each location.

- If refusal is encountered in the cobbles and boulders that comprise the shoreline area, the casing will be spun (coring method) to advance the borehole. This method will allow for the withdrawal of the down hole drilling tools for the collection of continuous split-spoon samples as required by NYSDEC.

- Soil sampling will be obtained for laboratory analyses at targeted intervals biased to elevated PID readings, visual, and/or olfactory criteria. Where visible evidence of residuals is not observed, and the results of the PID screening of soil samples are not found to be significantly elevated, two laboratory samples will be collected to document "clean" soil conditions. Depending on field conditions encountered, the samples will be collected at the water table and from the bottom of the boring.

- For the shallow borings, once the intended depth is reached in the soil boring (approximately 10 feet below the water table), a groundwater sample will be obtained by telescoping a stainless steel well point (with a continuous wire-wound 2 foot well screen) through the steel casing that is advanced to stabilize the borehole at a desired depth (i.e., approximately 10 feet). The screen will be packed with sand and a bentonite seal will be added (if possible). The casing will then be removed from the borehole. The well point riser will be fitted with a locking cap and a temporary outer casing for protection.

- For the deep boring(s) planned for the central portion of the anticipated plume area, a Solinst™ CPT multi-level system or equivalent will be used to collect groundwater samples at 10, 20, and 30 feet bgs in the unconsolidated river channel deposits to identify the vertical distribution of MGP-related constituents as requested by the NYSDEC. The multi-level well is comprised of a continuous length of multi-channel tubing that is housed in a single coil. The tubing will be inserted into the casing and each channel will be sealed with bentonite to avoid cross contamination between the monitoring zones. A product description sheet for the multi-level system is included in Attachment A.

- Each of the temporary well points and the multi-channel well(s) will be developed according to methods provided in the RI Work Plan. All of the well points will be allowed to stabilize for a period of at least 24 hours to ensure that a representative sample of groundwater is collected.

- After groundwater samples have been obtained from the temporary well points, the points will be removed and the borehole abandoned by filling the borehole with bentonite chips.

Groundwater Sampling

After the temporary well points have stabilized after development, a complete round of depth to water measurements will be collected for the river well points and the site monitoring wells. A groundwater sample will then be collected from each of these sampling points using methods provided in the RI Work Plan. The objective of the sampling will be to obtain chemical data from all of the groundwater monitoring locations during one sampling event to fully characterize groundwater conditions in the study area.

Sediment Probing

Sediment probing will be performed after completion of the soil boring task. The methods to be used include:

- The sediment transects probed by RETEC in 2001 (black color on Figure 1) will be re-probed in order to confirm the results regarding the presence of hydrocarbon sheen in the sediment materials.

- The SRI transect locations (red color on Figure 1) will then be probed in order to obtain data regarding the presence of hydrocarbon materials in the area of the anticipated dissolved groundwater plume.

- Sediments will also be probed in the area of a second storm sewer outfall in Port Jervis. The location of the outfall and the plan for probing at this location will be finalized in the field in consultation with the NYSDEC.

- Sediment accumulations in each area will be probed by hand with a steel bar and/or bucket auger (if possible) to observe the sediment physical characteristics, including the presence of hydrocarbon-like sheen or non-aqueous phase liquids (NAPL). If possible, sediments will be probed to a depth of 2 to 3 feet below the surface of the river channel bottom.

Sediment Sampling

The results of the sediment probing task will be used to finalize the locations of the sediment samples collected during the SRI. Approximately 30 shallow sediment samples will be collected from the locations shown on Figure 1. All samples will be collected from a depth interval of between 0 and 6 inches below the sediment surface. The sediment samples include:

- **BSD1 – BSD5** – Five background sediment samples will be collected from upstream locations to determine concentrations of constituents of interest (COI) in the area-wide setting of the site.

- **SD5 – SD12** – These sediment samples, shown in red on Figure 1, will be collected immediately adjacent to, or at the edge of areas where sediments with hydrocarbon sheen was observed during the probing activities performed by RETEC in 2001. This area includes the area of the Port Jervis Outfall. Note that it is intended that these samples be collected in the areas shown on Figure 1; however, the actual sample locations will be determined after the probing performed in this area of interest. The final sample locations will be determined in consultation with the NYSDEC.

- **SD13 – SD26** – These sediment samples, shown in red on Figure 1, will be collected in the area of the anticipated dissolved groundwater plume. The final locations for these samples will be determined in the field in consultation with the NYSDEC. Samples will be biased to areas were hydrocarbon impacts are observed, or if no impacts are observed, to obtain general coverage in the area most likely to be impacted by the dissolved groundwater plume, if any, discharging to the river from the site.

- **SD27 – SD29** – These sediment samples will be in an area down stream from the site (Area 2 shown on Figure 1) to obtain additional data near SD4, a sample collected by RETEC in 2001.

- **SD30 – SD35** – These samples will be collected from a second outfall area from the City of Port Jervis to obtain additional data regarding the concentrations of COI in the area-wide setting of the site. The final location of these samples will be determined in consultation with the NYSDEC.

Note that sediment samples SED1 and SD1 – SD4, shown in black on Figure 1, have been collected during previous sampling events performed by GEI and RETEC.

Analytical Program

Subsurface Soil

The subsurface soil samples collected during the SRI will be analyzed using the most current methods specified in the NYSDEC Analytical Services Protocol (June 2000) with Category B Deliverables prepared by the laboratory. The methods to be used are summarized below:

- BTEX - by NYSDEC ASP Method OLMO4.2;

- PAHs - by NYSDEC ASP Method OLMO4.2;

- Metals - Target Analyte List (TAL) Metals: aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc by NYSDEC ASP Method ILMO4.1; and

- Total Cyanide - NYSDEC ASP Method ILMO4.1.

Note that in addition to the parameters specified above, 10% of the subsurface soil samples analyzed during the SRI will be analyzed for the full Target Analyte List (TCL) for the volatile and semi-volatile organic analyses. For these samples, the laboratory will also analyze for tentatively identifiable compounds (TICs). These analyses will be completed to determine possible changes for the constituents of interest for the site and for any new off-site areas investigated.

Groundwater

The groundwater samples collected during the SRI will also be analyzed using the most current methods specified in the NYSDEC ASP. The methods to be used are summarized below:

- BTEX - by NYSDEC ASP Method OLMO4.2;
- PAHs - by NYSDEC ASP Method OLMO4.2; and
- Total Cyanide - NYSDEC ASP Method ILMO4.1.

Note that in addition to these analyses, 10% of the groundwater samples will be analyzed for TAL metals by NYSDEC ASP Method ILMO4.1 and the full TCL for the volatile and semi-volatile organic analyses. For these samples, the laboratory will also analyze for TICs.

Sediment Samples

The sediment samples will be analyzed by the following methods:

- PAHs - by NYSDEC ASP Method OLMO4.2; and
- Total Organic Carbon by the Lloyd Kahn Method.

In addition to the analyses specified above, soil samples will be archived in the laboratory for possible TAL metal analyses. The need to complete the metal analyses will be discussed with the NYSDEC after the results of the PAH analyses are available.

Depending on the results obtained from the PAH analyses for the sediment samples identified above, additional forensic analyses may be performed. If forensic analyses are determined to be necessary, O&R will consult the NYSDEC regarding the proposed methods to be used for the analyses and the subsequent interpretation of the data.

Site Survey

A site survey of the investigation sampling points and other features of interest will be conducted at the end of the field work by a New York State licensed surveyor under the direct supervision of the RETEC site manager. The elevation and location of each point will be recorded relative to an existing survey datum for the site. The field data will then be incorporated into the base map for the site. The data obtained during the SRI activities, as well as the data collected by Langan during the field activities performed in 2003, will be included in the revised RI Report for the site.

If you have any questions regarding the information provided in this letter, please do not hesitate to contact either Brian Quillia of O&R at (845) 577-3308 or myself at (607) 277-5716.

Sincerely,

The RETEC Group, Inc.

James H. Edwards

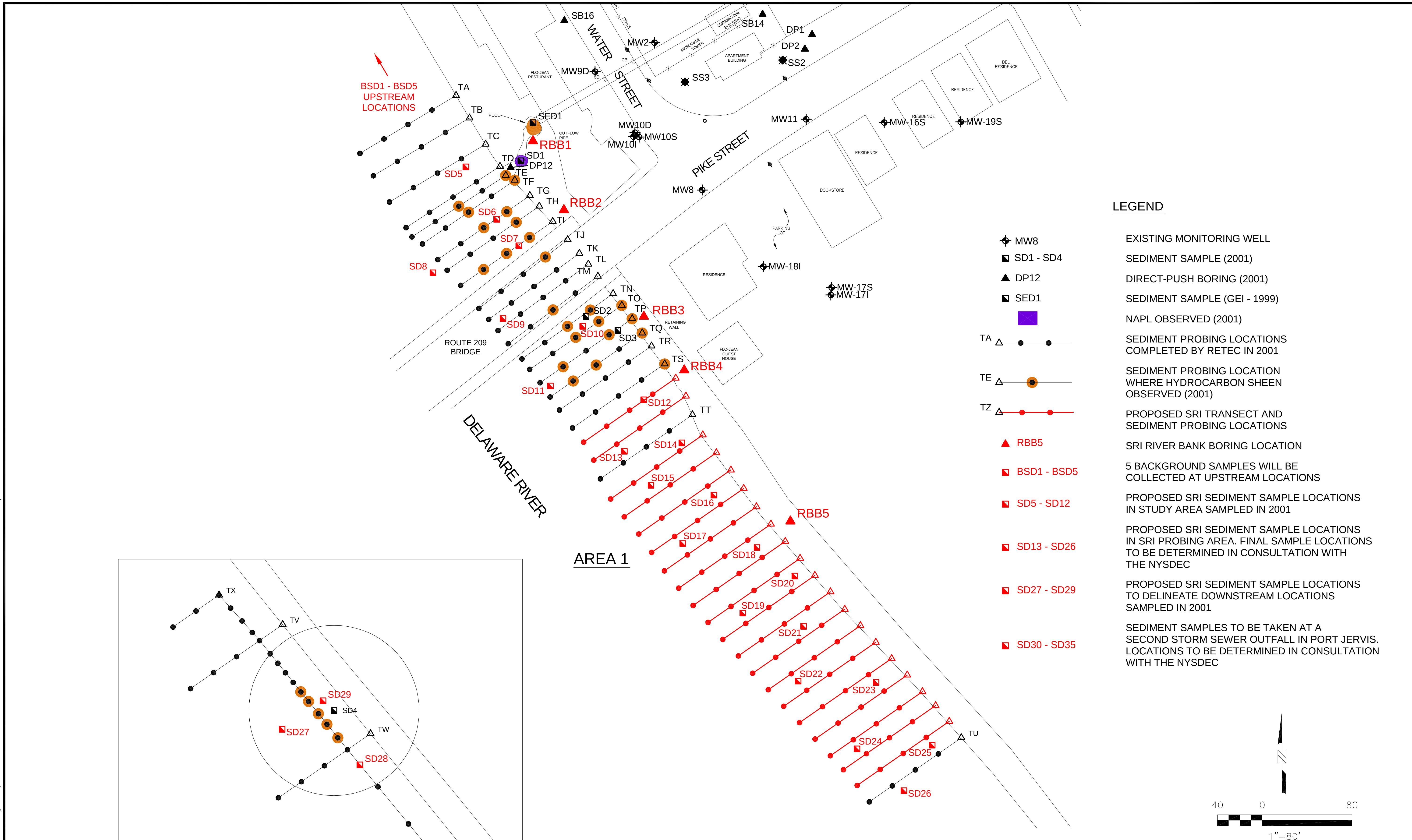
James H. Edwards
Senior Geologist

JHE:mlr

Attachments: Figure 1 – Proposed Sampling Locations
Attachment A

cc: Ms. Maribeth McCormick – O&R
Mr. Brian Quillia, P.E., – O&R
Mr. Robert Schick, P.E. – NYSDEC Albany
Ms. Kristin Kulow – NYSDOH
Mr. Gary Litwin – NYSDOH
Mr. Anthony Quartararo – NYSDEC Albany
Mr. Marc Moran – NYSDEC Region III
Mr. Bruce Coulombe, P.G. – RETEC
Mr. John Finn, P.E. – RETEC
File: ORAN2-15063

Figure



INSET AREA 2

AREA 2 LOCATED APPROXIMATELY
250' DOWNSTREAM OF AREA 1

RETEC

PORT JERVIS FORMER MGP SITE ORAN2-15063-100	**SRI RIVER AREA SAMPLE LOCATIONS**
DATE: 7/09/04 DRWN: MAW/BIL	**FIGURE 1**

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Attachment A

Narrow 3-Channel CMT

Ideal for installation using direct push rigs, the new narrow 3-Channel CMT Multilevel System is only 1.1" (28 mm) in diameter. The extruded polyethylene tube has 3 channels identical in shape to the central channel of the standard 7-Channel CMT, which is a hex shape with a nominal 3/8" (9.5mm) diameter. Each CMT installation allows the monitoring of 3 discrete zones, with reliable seals, as proven by the 7-Channel CMT.

Now you can install a transect of CMT multilevel wells inexpensively at a site, to provide both horizontal and vertical contaminant distribution and hydraulic head data. This allows unprecedented definition of site conditions, improves decision-making and allows site remediation to be optimized, all at a very reasonable cost.

Narrow 3-Channel CMT Components

Multichannel Tubing Installation & Monitoring

The Narrow 3-Channel tubing is available in 100', 200' & 500' (30m, 60m & 150m) coils, which may be subdivided as needed to minimize waste. Installation components and tools are similar to those for the 7-Channel CMT and include a Wellhead, Guide Point, Port Cutting Guide and assembly tools. Port Assembly Kits include plugs, screen and clamps.

Sampling options include the Mini Inertial Pump, Peristaltic Pump and a Micro Double Valve Pump, as with the 7-Channel CMT. Level measurements may be obtained with a Model 102 Water Level Meter with the 1/4" (6.4mm) diameter probe.

For applications where the Narrow CMT is installed using lifts of sand and bentonite, there is now an alternate 1/2" (12.7mm) diameter tag weight available for the Model 103 Tag Line. Pre-formed Sand Packs and 2.3" (63.5mm) Bentonite Seals are under development.

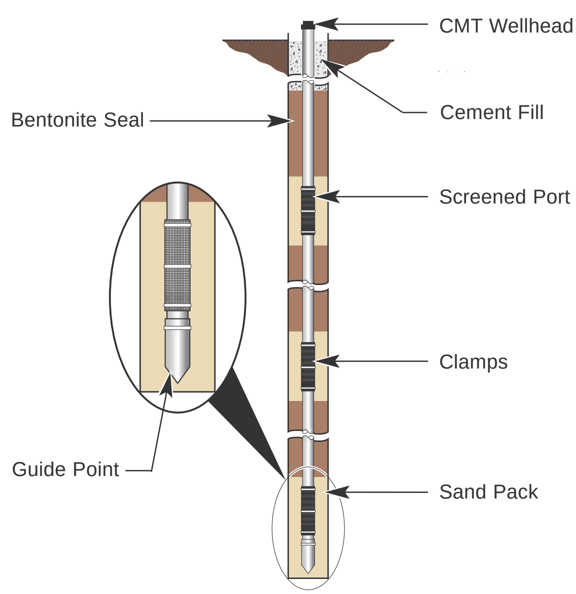
Narrow 3-Channel CMT with Numbered Wellhead

Applications

- Ideal for contaminant investigations at gas stations and industrial sites
- Designed for direct push installation
- Gas vapor sampling in unsaturated zones
- Perchlorate and MTBE investigations
- Shallow monitoring locations with high water table
- Sites with up to 3 monitoring zones per borehole.

Advantages

- Provides 3 discrete monitoring locations in one narrow borehole
- Easy to build and install
- Ideal for narrow direct push installations
- Fast, accurate and affordable



Typical Installation - Direct Burial Method

For further information contact: Solinst Canada Ltd.
Fax: (905) 873-1992; (800) 516-9081 Tel: (905) 873-2255; (800) 661-2023
35 Todd Road, Georgetown, Ontario, Canada L7G 4R8
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Solinst®

Model 403 Data Sheet

CMT® Multilevel
Continuous Multichannel Tubing

CMT Multilevel System

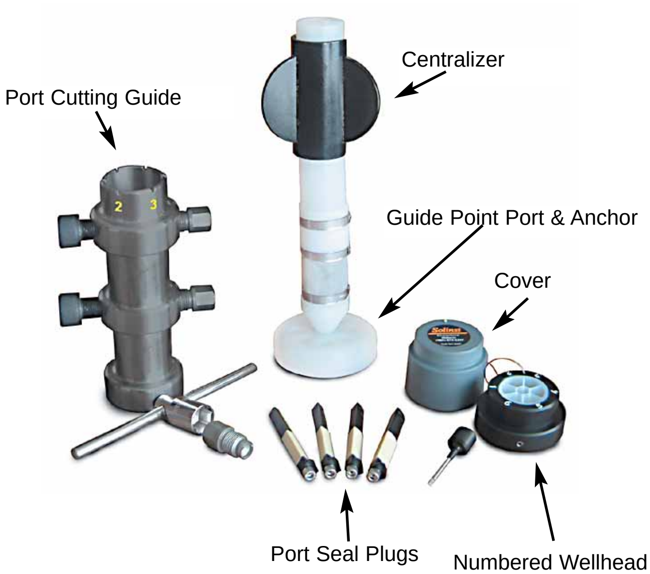
Model 403

This reliable easy to install and inexpensive multilevel system provides site assessors with a better understanding of the three-dimensional groundwater flow and distribution of contaminants. Remediation strategies can then be targeted more precisely, focusing efforts in the most effective manner.

The CMT Multilevel System makes the accurate monitoring of contaminant plumes much more affordable. It provides detailed vertical as well as horizontal data. The simple 1.7" (43 mm) OD polyethylene tube is segmented into 7 channels, allowing groundwater monitoring at up to 7 depth-discrete zones. Monitoring zones are set where needed and the single tube design allows reliable seals between zones.

Applications

- Ideal for shallow wells in high water table
- Multilevel water sampling and level monitoring in unconsolidated soils, bedrock or screened wells
- Monitoring of natural attenuation or remediation processes
- Identify vertical as well as horizontal contaminant distribution with transect monitoring
- NAPL, VOC, MTBE and Perchlorate Monitoring
- Mass transport calculations and mass flux estimation
- Determination of the best location for reactive barrier walls



Endorsements

"We used CMT to monitor groundwater down gradient of an ORC barrier wall in a pilot study at a Superfund site....Our results showed that the CMT and packers performed as expected, isolating each sampling zone. Use of the CMT was an excellent idea."

Brian Butler, Senior Geologist,
Harding ESE

"Our initial assessment of the CMT system is that, it is performing as expected and we are pleased with the capability it provides..... Really great innovation, characterizes core of plume with far fewer wells."

Fred Kintzer, Principal
Geologist,Project Manager
Parsons Engineering Science Inc.

"On a chlorinated solvent site, it was extremely useful as a site characterization tool to better map contaminant's in 3D .... allowed targeting of remediation efforts."

Tim Buscheck,
Senior Staff Hydrogeologist,
ChevronTexaco

Numbered Wellhead

Advantages of Multilevel Systems

- Provides the most accurate 3-D assessment of a site
- Vital to understanding vertical flow of contaminants
- Allow documentation of changes in the concentration and delineation of a contaminant plume
- Low cost compared with multiple individual wells

Research has shown that contaminant plumes are often thin and highly stratified. Traditional monitoring wells, with screened intervals of 10 ft. (3 m) or more, blend the groundwater over the entire length of the screen. This can mask the true concentrations and distribution of contaminants. Multilevel wells with short screened intervals overcome this problem and offer more precise identification, better design options for treatment and ongoing monitoring.

Advantages of the CMT Multilevel

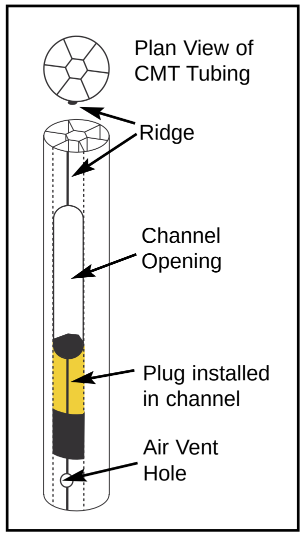
- Low cost and ease of use
- Up to 7 depth-discreet zones in a single tube
- No joints: one smooth surface for easy, effective sealing
- Locate ports and packers anywhere along the tubing
- Installations completed using alternate sand and bentonite layers are reliable and inexpensive
- Double-Acting Packers allow easy system removal
- Simple system usually customized and built on site
- The hole is not left open to allow cross contamination
- Installs quickly in large direct-push casing and bigger holes
- One 7-zone CMT System can be completed by two people in under 3 hours.
- Minimizes the risk of producing new contaminant pathways.

CMT System Being Installed Beside Direct Push Rig

Multichannel Tubing

A multilevel well that uses a continuous length of multichannel tubing has the advantage over other multilevels in that there are no joints. This significantly reduces the time and cost of installing wells and at the same time increases the reliability of the system. The CMT tubing is very simple and convenient to use, as it gives full flexibility as to where monitoring zones are located. Also a single coil of tubing can be used for a number of well installations.

The tubing has a ridge down its entire length to allow for easy identification of specific channels. Ports and packers can be assembled in the field, immediately after drilling the borehole, to reduce open hole time and potential cross-contamination between zones.



Port Configuration

Inserting a Plug

Completed Port

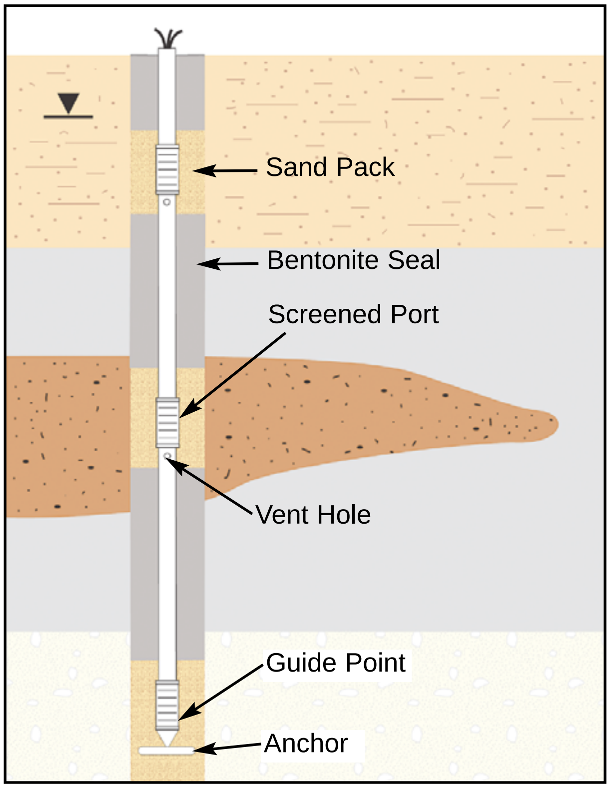
Ports

The number and location of ports may be determined in advance, or after drilling the borehole. A Port Cutting Guide is used to cut 2 holes in a vertical line into a given channel, at the specified depth for each zone to be monitored. The plastic between the holes is cut out leaving an opening suitable for inserting a plug, as illustrated above. The plug is positioned and sealed in the channel just below the channel opening.

A vent hole is also placed just below the plug to allow air to escape as the system is lowered into the borehole. This allows water from the monitoring zone to fill the channel below the zone to overcome buoyancy. A stainless steel screen is fixed in place over the port to prevent fines from entering. The screen kits come in a variety of mesh sizes, complete with clamps and plugs. Each channel is sealed at the bottom of the tubing to avoid cross contamination between monitoring zones.

Seals & Packers

The CMT tubing can be installed using standard sand and bentonite layers placed using a tremie pipe, shallow depth gravity feed, or with the Solinst Mini Sand Bentonite Injector, (Model 561M). If the application is in loose sands, direct burial can be used, allowing the sand to collapse around the tubing.



Typical CMT Installation in Overburden with Bentonite Seals and Sand Pack

Ports and packers are placed exactly where needed prior to installation

Double-Acting Packers

Double-Acting Packers are ideal for use in situations where a CMT System is in a cased or screened well, or in a smooth rock borehole, and when removal of the system for decommissioning or reuse is important. The Double-Acting Packers have both an inner and an outer gland to seal against the CMT tubing and the borehole. The packers are hydraulically inflated allowing easy removal.

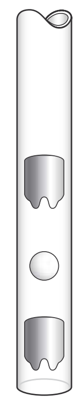
CMT Multilevel

Water levels and samples can be accurately obtained using the following quality Solinst instruments:

Level: The Mini 101 Water Level Meter is excellent for shallow CMT Systems, in lengths of 30ft, 65ft, 10m or 20m. The narrow 1/4" (6 mm) tape is mounted on a convenient small reel. A narrower coaxial cable Model 102 Water Level Meter may be easier for use in deeper CMT Systems. The 3/8" dia. (10 mm) Druck Pressure Transducer can be used with a data logger for continuous level monitoring.

Model 101 Mini Water Level Meter

Model 102 Water Level Meter



1/4" (6mm) Mini Inertial Pump (MIP)

Druck Transducer

Model 408M Double Valve Pump

Model 466 Electronic Control Unit

Model 410 Peristaltic Pump

Sampling: The Model 408M Micro Double Valve Pump (DVP) is ideal for low flow VOC sampling in narrow applications. The 408M is made of flexible Teflon® tubing which is 3/8" (10mm) in diameter. A manifold at the surface has a quick-connect fitting for attachment to the Solinst Model 466 Electronic Control Unit and a bypass for easy sample collection. Operation is easy as the Electronic Control Unit has built in pre-sets. Sampling can also be done with the Solinst Model 410 Peristaltic Pump which has a suction lift limit of approximately 25 ft (7.5 m) or with a Mini Inertial Pump which operates to greater depth.

Model 103 Tag Line

The Model 103 Tagline is ideal for accurate placement of sand and bentonite during borehole completion.

Drilling Methods and Techniques for Installing CMT Wells in Unconsolidated Aquifers

Drilling Method	Advantages	Preferred CMT Installation Technique	Comments
Sonic	Casing advance during drilling minimizes redistribution of contaminant's in borehole. Steel casing prevents borehole from collapsing as CMT well is being built. Vibration of the casing during removal reduces likelihood of bridging annular materials.	Place CMT tubing into casing with anchor plate attached to bottom of tubing. Use tubing centralizers to center tubing inside sonic casing. Add alternating lifts of sand and bentonite pellets as casing is withdrawn using either gravity placement, tremie methods or using the Solinst Mini Sand Bentonite Injector (561M).	Depths up to 300 feet. Use casing with an inside diameter (ID) of at least 4 inches (100 mm). Addition of water to casing may be needed to counteract buoyancy and heaving sand as casing is removed.
Hollow Stem Auger (HSA)	Rigs widely available. Augers provide temporary casing that can be withdrawn as CMT System is constructed.	Place CMT tubing with anchor plate into borehole inside of hollow stem augers. Add alternating lifts of bentonite pellets and sand as augers are removed. CMT tubing centralizers may be needed to keep annular space open during well construction.	Generally limited to depths of approximately 100 feet. Water may need to be added to augers to counteract heaving sand conditions. Use augers with at least a 4-inch ID.
Direct Push (DP)	Rigs are widely available.	Insert CMT tubing into DP casing, then withdraw casing.	Best for shallow installations where sand collapses around CMT tubing. May be difficult to tremie sand and bentonite due to small annular space between CMT tubing and DP casing.
Air Rotary with Casing Advance	Casing prevents borehole from collapsing as CMT well is being built gives a consistent-diameter borehole. Prevents redistribution of contaminants along borehole wall during drilling.	Place CMT tubing into casing with anchor plate. CMT tubing centralizers should be used to center tubing in borehole. Add alternating lifts of sand withdrawn, using either gravity placement, tremie methods or using the Solinst Mini Sand Bentonite Injector.	Select casing with at least a 4-inch (100 mm) ID. Addition of water is commonly needed to prevent heaving as casing is removed.
Mud Rotary	Widely available.	Place CMT tubing directly into borehole with anchor plate attached to bottom of tubing. CMT tubing centralizers should be used to center CMT tubing in borehole. Place sand pack and bentonite with a tremie tube and grout pump.	Thin drilling fluid as much as possible prior to installing annular materials. Use a coarse-grained filter pack. Mud filter cake can be difficult to remove with development methods available for CMT wells.

CMT System Components

The tubing is available in lengths of 100ft, 200ft & 300ft (30m, 60m & 90m). The coils are approximately 4ft. (1.2m) in diameter. If deeper multilevels are desired the Waterloo Multilevel System can be considered. (See Data Sheet 401). CMT tubing is laid out on the ground or plastic sheeting for the preparation of ports, and for placement of packers, when used. The 1.7”OD (43mm) CMT tubing has 7 channels. The 6 outer channels are approximately 7/16” ID (11mm) and the smaller central channel is 3/8” (9.5mm). The port screens are held in place using low profile clamps.

Double-Acting Packers are available in diameters to seal 3” and 4” (75 mm and 100 mm) wells. Centralizers can be used to help position the tubing in the borehole to ensure proper sand and bentonite distribution. The base of the system is completed with a Guide Point Port, which functions both as a point for easier installation and as a seventh port when needed. An optional anchor may be added to prevent the system from lifting during installation. The top of the CMT System is completed with a numbered wellhead that labels each channel for easy identification.

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