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Engineers, Planners and Scientists

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May 21, 1987

72

Deane H. Bartlett  
Environmental Protection Agency  
Region III  
841 Chestnut Street  
Philadelphia, Pennsylvania 19107

RECEIVED  
GEOLOGICAL REMEDIATION SECTION

MAY 22 1987

Subject: Dublin Work Plan  
BCM Project No. 00-5681-01

EPA - Region III

Dear Ms. Bartlett:

As a result of the meeting held on March 13, 1987, at the U. S. Environmental Protection Agency (EPA) Region III Headquarters, BCM Eastern Inc. (BCM) has prepared a work plan addressing private wells in northern Dublin Borough which have been found to contain trichloroethene (TCE). The work plan is designed to satisfy requirements described in paragraphs 20 through 28 of the draft Consent Order that will be entered into between the EPA and John H. Thompson (Thompson). The plan describes the means by which treated water will be provided to private well owners.

The work plan is based on the results of groundwater sampling conducted by the Bucks County Health Department and by BCM. Analytical data were submitted to the EPA on December 19, 1986, and again, under a new format, on March 11, 1987.

In accordance with criteria established by EPA, point-of-use water treatment systems will be installed and periodic water sampling will be performed on selected private wells. The EPA established four categories, or tiers, to guide appropriate action for each well. Each tier addresses a TCE concentration range and appropriate corrective action and followup monitoring. The following outline describes each of the tiers. Tables 1 through 4 list the wells and observed TCE concentrations in Tiers I through IV respectively.

Tier I

- TCE Concentration range: Greater than nondetected but less than 5 micrograms per liter (ug/l).
- Corrective Action: None required.
- Monitoring: Well water will be sampled twice annually.

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AR400378



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-2-

May 21, 1987

Tier II

- TCE concentration range: 5 to 75 ug/l.
- Corrective Action: At the discretion of the well user, either bottled water will be supplied or a granular activated carbon (GAC) treatment system will be installed at the tap used for cooking and drinking (kitchen tap).
- Monitoring: Treated tap water will be sampled quarterly, and untreated well water will be sampled twice annually.

Tier III

TCE concentration range: 76 to 260 ug/l.

Corrective Action: A GAC treatment system designed to treat the entire water system will be installed at all residential dwellings. At businesses, bottled water will be supplied, or a GAC treatment system will be installed at the tap used for drinking water.

Monitoring: Treated tap water and untreated well water will be sampled quarterly. In the event treatment systems are in place, samples will be conducted before and after treatment.

Tier IV

TCE Concentrations Range: Over 260 ug/l.

Corrective Action: Same as Tier III.

Monitoring: Treated tap water and untreated well water will be sampled quarterly. In the event treatment systems are in place, samples will be conducted before and after treatment.

*changed from  
March draft work plan:  
monthly monitoring  
for treated H<sub>2</sub>O  
↓  
quarterly monitoring  
for treated H<sub>2</sub>O*

The work plan includes a phased approach for the completion or implementation of all tasks outlined by the four tier system, as described below.

WORK PLAN

Phase I

BCM will perform the following tasks prior to initiation of Phase II:

AR400379



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(Red)

Deane H. Bartlett

-3-

May 21, 1987

- Determine the accessibility of each residence or business listed in Tables 1 through ~~3~~<sub>4</sub>.
- Obtain bids from contractors who can provide and install appropriate treatment systems within a specified time table.
- Determine the preference of each residence or business for bottled water or kitchen tap treatment.
- Prepare a specific sampling schedule for treatment systems and wells.
- Retain a contractor who will provide bottled water on a demand basis.

Phase II

Phase II will include the provision of supplied water and installation of GAC treatment systems.

The following tasks are included in Phase II:

- Implement a bottled water delivery program for those residences in Table 2 (Tier II) and businesses in Tables 2, 3, and 4 who choose bottled water over kitchen tap treatment or drinking water supply treatment systems.
- Install a kitchen tap water treatment system at those residences in Table 2 (Tier II) and a drinking water supply treatment system in businesses in Tables 2, 3, and 4 who choose treatment over bottled water.
- Install a full water treatment system at those residences listed in Tables 3 and 4.
- Install a flow meter on all residences and businesses with treatment systems.

~~at the~~  
~~annex with,~~  
~~but appeared.~~

Phase III

Phase III will consist of the monitoring program, maintenance of treatment systems, and provision of bottled water.



ORIGINAL  
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Deane H. Bartlett

-4-

May 21, 1987

The following tasks are included in Phase III:

- Conduct periodic sampling of treated water from those systems with GAC treatment and of untreated well water in accordance with the schedules described above for each tier.
- The first full set of samples (all wells before and after treatment) will be analyzed for volatile organic compounds (VOCs) by gas chromatography (GC), using EPA Method 601. Thereafter, samples will be analyzed for TCE, PCE, and vinyl chloride by Method 601, unless other VOCs are detected in the first set of samples, in which case, such VOCs will also be analyzed.
- Conduct a full round of sampling at the completion of Phase II.
- Record flow rates concurrent with sampling each residence or business with a treatment system.
- Periodic maintenance of GAC treatment systems will be performed in a manner consistent with the system provided. This will normally consist of replacing the carbon bed.
- Maintain the provision of bottled water, as appropriate.
- BCM Quality Assurance/Quality Control (QA/QC) procedures will be followed in collecting and analyzing all samples. QA/QC for monthly sampling will be covered during quarterly sampling. *→ who has monthly sampling? Robert Ruffe (280 ppb)?*

The effectiveness of treatment systems will be evaluated after each sampling event. System repairs or maintenance will be performed whenever TCE concentrations are found greater than 5 ug/l in drinking water. The work plan shall remain in effect for approximately 1 year after the effective date of the Consent Agreement. After 1 year, the sampling program will be evaluated, and the sampling frequency and treatment system maintenance schedules may be adjusted. *At that time*

Treatment and sampling will continue until it has been demonstrated to the satisfaction of EPA that TCE levels are consistently less than 5 ug/l. Such determinations will be made for each well on a case-by-case basis.

*indicating the revised treatment and monitoring program*

AR400381



ORIGINAL  
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Deane H. Bartlett

-5-

May 21, 1987

SCHEDULE

The implementation of the work plan will be triggered by the signing of the Consent Order.

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Task	Completion Time (Days)
Phase I	30*
Phase II	90*
Phase III	NA

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\* Dependent on access to the individual properties

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Please direct any questions regarding this work plan to Steffan Helbig or me.

Very truly yours,

Steven F. Kemp  
Geologist

/am

Enclosures

cc: M. Mason, EPA  
B. McCullough, Connolly, Chandler & McAndrews  
J. Manko, Wolf, Block, et al.  
S. Helbig, BCM  
A. Robinson, BCM

AR400382



ORIGINAL

TABLE 1

TIER I WELLS AND TCE CONCENTRATIONS  
DUBLIN TCE SITE  
BUCKS COUNTY, PENNSYLVANIA

Name	Address	Highest TCE Concentration Before Treatment (Date of Sample)	Highest TCE Concentration After Treatment (Date of Sample)
Hansel	116 N. Main St.	2.2 (07/02/86)	NT
Slaymaker	163 N. Main St.	ND (07/01/86)	NT
Louis Marks	169 N. Main St.	3.8 (12/02/86)	NT
Bunting	170 N. Main St.	3.7 (08/04/86)	NT
Dublin Fire Co.	194 N. Main St.	4.0 (12/02/86)	NT
Margaret Miller	113 Elephant Rd.	ND (12/02/86)	NT
Slaymaker	114 Elephant Rd.	ND (11/26/86)	ND (11/26/86)
Merrill Myers	139 Elephant Rd.	1.3 (09/09/86)	NT
Irma Detweiler	150 Elephant Rd.	2.2 (11/26/86)	NT
Rush	152 Elephant Rd.	1.0 (11/26/86)	NT
Dublin Acres, Well 1	Richerts Rd.	3.2 (06/25/86)	NT
Dublin Acres, Well 2	Richerts Rd.	1.4 (12/02/86)	NT
Robert Oty	105 Middle Rd.	2.1 (07/15/86)	NT
Wood Edge Apts.	126 Middle Rd. Apt. D2	1.0 (06/26/86)	NT
Dairy Queen	N. Main St., Mill St.	1.0 (06/26/86)	NT
Dublin Inn	101 S. Main St.	ND (09/09/86)	NT
Harris	215 Frontier Rd.	1.0 (08/04/86)	NT

NT No Treatment System  
ND Not Detected

All levels are in micrograms per liter (ug/l).

Tier I residences and businesses require semiannual monitoring.  
Tier I concentrations are greater than nondetectable but less than 5 ug/l, or residences and businesses are located in a high risk area.

Source: BCM Eastern Inc. (BCM Project No. 00-5681-01, May 1987)

AR400383



TABLE 2

TIER II WELLS AND TCE CONCENTRATIONS  
DUBLIN TCE SITE  
BUCKS COUNTY, PENNSYLVANIA

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Name	Address	Highest TCE Concentration Before Treatment (Date of Sample)	Highest TCE Concentration After Treatment (Date of Sample)
Dublin Hardware*	105 N. Main St.	31.2 (12/01/86)	ND (12/01/86)
Rhines Gulf	112 N. Main St.	11.9 (11/26/86)	NT
Terry Hinsdale	113 N. Main St.	17.3 (12/01/86)	NT, SW
Bogle	115 N. Main St.	40.0 (08/05/86)	NT, SW
Buchaman	117 N. Main St.	10.2 (11/26/86)	NT
Hirst	119 N. Main St.	34.1 (11/26/86)	NT
Moyer Auto Body	130 N. Main St.	61.8 (06/23/86)	NT, SW
Dublin Garage	139 N. Main St.	17.0 (08/04/86)	NT, SW
First Federal Bank*	142 N. Main St.	64.5 (12/02/86)	4.3 (12/02/86)
Dublin Diner*	N. Main St.	64.6 (11/26/86)	ND (11/26/86)
Detweiler*	153 N. Main St.	62.4 (12/02/86)	ND (12/02/86)
Dublin Village Plaza (IGA)	161 N. Main St.	16.3 (12/02/86)	NT
Doylestown Federal	174 N. Main St.	7.8 (06/23/86)	NT
Dublin Post Office*	N. Main St.	33.7 (12/02/86)	ND (12/02/86)
Jacobs Auto Supply	133 W. Main St.	14.5 (12/02/86)	NT
Grace	115 Elephant Rd.	5.3 (12/02/86)	NT
Black	116 Elephant Rd.	5.9 (11/26/86)	NT, BW
Dudley Sports Office	112 Maple Ave.	8.3 (11/26/86)	NT
Drake	118 Maple Ave.	12.5 (11/26/86)	NT

\* Total system water treatment already in place

SW Supplied water is used for drinking (purchase, supplied)

NT No treatment unless otherwise specified

BW Water is boiled before drinking

ND Not detected

All levels are in micrograms per liter (ug/l)

Tier II residences and businesses require bottled water or kitchen tap granulated carbon treatment and quarterly monitoring. Tier II concentrations range from 5 ug/l to 75 ug/l.

Source: BCM Eastern Inc. (BCM Project No. 00-5681-01, May 1987)

AR400384

TABLE 3

TIER III WELLS AND TCE CONCENTRATIONS  
 DUBLIN TCE SITE  
 BUCKS COUNTY, PENNSYLVANIA

ORIGINAL  
 (1)

Name	Address	Highest TCE Concentration Before Treatment (Date of Sample)	Highest TCE Concentration After Treatment (Date of Sample)
Barbara Fluck*	128 N. Main St.	217 (07/15/86)	1.6 (12/2/86)
Myers	124 N. Main St.	179 (11/26/86)	NT
Myers	126 N. Main St.	160 (12/02/86)	NT, SW
Moyer Flower Shop	138 N. Main St.	85.2 (11/26/86)	NT, SW
Bucks County Bank	145 N. Main St.	242 (06/26/86)	NT, SW
Schmell*	149 N. Main St.	105 (07/15/86)	ND (12/02/86)
Moyer	146 Elephant Rd.	150 (08/04/86)	NT, BW, SW
Beauty Shop**	104 Maple Ave.	82.0 (11/26/86)	104 (11/26/86)

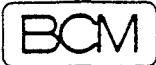
\* Total system water treatment already in place  
 \*\* Partial system water treatment already in place  
 SW Supplied water is used for drinking (purchase, supplied)  
 NT No treatment unless otherwise specified  
 BW Water is boiled before drinking  
 All levels are in micrograms per liter (ug/l)

Tier III residences require full system carbon treatment. Tier III businesses require bottled water or kitchen tap granulated carbon treatment.

Treated tap water and/or untreated well water require monitoring. Tier III concentrations range from 76 to 260 ug/l.

Source: BCM Eastern Inc. (BCM Project No. 00-5681-01, May 1987)





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TABLE 4

TIER IV WELLS AND TCE CONCENTRATIONS  
DUBLIN TCE SITE  
BUCKS COUNTY, PENNSYLVANIA

Name	Address	Highest TCE Concentration Before Treatment (Date of Sample)	Highest TCE Concentration After Treatment (Date of Sample)
Whistlewood Apts.*	107 N. Main St.	500 (06/17/86)	ND (11/26/86)
Robert Rufe	122 N. Main St.	283 (12/02/86)	NT, SW
Emico, Inc., Well 1	123 N. Main St.	360 (06/23/86)	NT, SW
Emico, Inc., Well 2	123 N. Main St.	500 (06/23/86)	NT, SW
Farm Bureau*	104 Mill St.	1,000 (06/26/86)	ND (11/26/86)
Thompson Plant Well 1	120 Mill St.	10,000 (07/15/86)	NT, SW
Thompson Plant Well 2	120 Mill St.	514 (11/26/86)	NT, SW

\* Total system water treatment already in place  
 SW Supplied water is used for drinking (purchase, supplied)  
 NT No treatment unless otherwise specified  
 ND Not detected  
 All levels are in micrograms per liter (ug/l).

Tier IV residences require full carbon treatment, and businesses require bottled water or kitchen tap granulated carbon treatment. Residences require monthly monitoring of treated tap water and quarterly monitoring of untreated well water. Businesses require quarterly monitoring of treated tap water and untreated well water. Tier IV concentrations are greater than 260 ug/l.

Source: BCM Eastern Inc. (BCM Project No. 00-5681-01, May 1987)