



October 14, 2014

Paul Cho, P.G.
Water Resources Control Engineer
California Regional Water Quality Control Board, Site Cleanup Unit IV
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Subject: Request to permanently abandon non-essential wells and temporarily abandon wells that are specified in the Monitoring and Reporting Program for the Defense Fuel Support Point Norwalk, 15306 Norwalk Boulevard, Norwalk, California (SCP NO. 0286A, Site ID NO. 16638)

Dear Mr. Cho:

Attached is a Work Plan identifying all wells that need to be removed preceding the soil excavation at the DSFP Norwalk site.

It is understood, that the approval to excavate and treat via bioremediation has not been approved by the RWQCB. However, in the event on-site treatment is not permitted, the options of disposal or off-site treatment would still require excavation and in turn, require the wells to be removed. We would therefore like to request permission to commence with the well removal activity as described in the Work Plan.

We appreciate the LARWQCB considering this request and reviewing the associated Work Plan. If you have any questions, please call me at (562) 597-1055.

Sincerely,

A handwritten signature in blue ink that reads "Ken E. Wall".

Ken E. Wall
Senior Project Engineer
The Source Group, Inc

Ec: Mr. Everett Bole, DLA Energy
Mr. Neil F. Irish, P.G., SGI
File: DFSP Norwalk – 04-NDLA-007

1962 Freeman Avenue
Signal Hill, California 90755

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Mr. Paul Cho

Page 2
October 14, 2014

Enclosures:

Attachment A – Work Plan Well Abandonment - DFSP Norwalk

WORK PLAN FOR WELL ABANDONMENT

Defense Fuel Support Point Norwalk
15306 Norwalk Boulevard
Norwalk, CA 90650

04-NDLA-007

Prepared For:



Defense Logistics Agency
8725 John J. Kingman Avenue
Fort Belvoir, Virginia 22060-6222

Prepared By:



1962 Freeman Avenue
Signal Hill, California 90755

October 14, 2014

Prepared By:

A handwritten signature in blue ink, appearing to read "Ken Wall".

Ken Wall
Senior Project Engineer

Reviewed By:

A handwritten signature in blue ink, appearing to read "Neil F. Irish".

Neil F. Irish, P.G. 5484
Principal Geologist

TABLE OF CONTENTS

	<u>PAGE</u>
<u>LIST OF FIGURES</u>	<u>ii</u>
<u>LIST OF TABLES</u>	<u>ii</u>
<u>1.0 INTRODUCTION</u>	<u>1-1</u>
<u>1.1 SITE LOCATION AND VICINITY</u>	<u>1-1</u>
<u>1.2 OBJECTIVE OF THE WORKPLAN</u>	<u>1-1</u>
<u>1.3 BACKGROUND</u>	<u>1-2</u>
<u>2.0 SITE GEOLOGY AND HYDROGEOLOGY</u>	<u>2-3</u>
<u>2.1 SITE GEOLOGY</u>	<u>2-3</u>
<u>2.2 SITE HYDROGEOLOGY</u>	<u>2-3</u>
<u>3.0 PROPOSED WELL REMOVAL</u>	<u>3-1</u>
<u>3.1 SCOPE OF WORK</u>	<u>3-1</u>
<u>3.2 PREFIELD ACTIVITIES</u>	<u>3-1</u>
3.2.1 FIELD ACTIVITIES	3-1
<u>3.3 REPORTING</u>	<u>3-2</u>
<u>3.4 SCHEDULE</u>	<u>3-2</u>
<u>4.0 LIMITATIONS</u>	<u>4-1</u>
<u>5.0 REFERENCES</u>	<u>5-1</u>

LIST OF FIGURES

Figure 1 Well Removal Map

LIST OF TABLES

Table 1 List of Wells to be Removed

1.0 INTRODUCTION

This *Work Plan for Well Removal* (Work Plan) was prepared by The Source Group, Inc. (SGI), on behalf of the Defense Logistics Agency Energy (DLA Energy). This Work Plan was requested by the Regional Water Quality Control Board (RWQCB) preceding soil excavation and treatment at the Defense Fuel Supply Point Norwalk facility (DFSP Norwalk). The RWQCB required that DLA Energy develop a Work Plan for the removal of wells necessary for the site wide excavation and biotreatment of soil. A total of 44 wells need to be removed as they are within the excavation footprints throughout the site. Eight of the groundwater monitoring wells are included in the DLA Groundwater Monitoring and Reporting Program (MRP), and five wells are included in the Santa Fe Pacific Pipeline, L.P. (SFPP) MRP. Kinder Morgan Energy Partners, L.P. (KMEP) and their consultant CH2M Hill are responsible for implementing the SFPP MRP.

This Work Plan identifies all wells to be removed. A summary of the wells to be removed includes:

- 8 groundwater wells that are a part the DLA MRP
- 5 groundwater wells that are a part of the SFPP MRP
- 4 groundwater wells that not part of either DLA or SFPP MRP's.
- 1 groundwater extraction well that is part of the SFPP groundwater extraction/treatment system
- 1 groundwater well that is gauged annually
- 9 inactive sparging wells
- 14 inactive vapor extraction/monitoring wells
- 2 active horizontal vapor extraction wells

The second semi-annual groundwater gauging and monitoring event will occur prior to excavation (October 27-October 29, 2014). Wells would then be removed. Wells that need to be replaced will be constructed after excavation is complete. As such, those wells that are part of either the DLA or SFPP MRP will either miss one or two semi-annual monitoring events.

1.1 Objective of the Workplan

The objective of this Work Plan is to provide rationale and methods to be employed during the removal of select wells located at DFSP Norwalk. The removal of the wells identified in this Work Plan is necessitated due to the planned excavation and treatment of vadose zone, petroleum contaminated soil present at the Site. This Work Plan presents the well identities and their respective locations in relation to planned excavation areas. Figure 1 shows the location, status, and ownership of the wells to be removed. Table 1 provides a tabulated summary of the wells to be removed and includes well locations, well type, and well construction details.

1.2 Site Location and Vicinity

The DFSP Norwalk facility is an approximately 50-acre facility that formerly included 12

aboveground storage tanks used for storage of jet propellant (JP) JP-4, JP-5, and JP-8. Aviation gasoline was reportedly distributed at the truck rack, but not stored in the above ground tanks. SFPP, an operating partner of KMEP, leases a 2-acre easement along the southern and eastern boundaries of DFSP for operation of its pipelines, which convey gasoline, diesel, and jet fuel. Within the southern easement lie three active pipelines, one of which is a 16-inch diameter pipeline, designated LS-1, that bends at the southeastern corner of the facility and continues northward within the eastern easement. An abandoned pipeline, likely owned or formerly operated by Golden West Pipeline, also runs along the eastern boundary of the site. The DLA has decommissioned the site, but SFPP pipelines continue to operate.

1.3 Background

Defense Fuel Support Point Norwalk is located at 15306 Norwalk Boulevard, in Norwalk, California. The real property is owned by the Air Force and controlled through the offices of March Air Reserve Base. The Defense Logistics Agency – Energy (DLA Energy) is responsible for environmental site restoration. The facility was formerly used to receive, store, and distribute military grade jet fuel. Active operations ceased in the 1990s and the tanks and above ground infrastructure were removed in 2012. As a result of fuel handling operations, soil and groundwater at the site have been contaminated with petroleum hydrocarbons.

In addition to soils contaminated by site fuel handling operations, an area of buried “oily sands” is present in the southwestern portion of the site. Previously, DLA-Energy successively petitioned the Los Angeles Regional Water Quality Control Board (RWQCB) for no-further action status of this material. At the time, it was demonstrated that in spite of high concentrations of petroleum hydrocarbons present in the oily sands (with concentrations in excess of 50,000 milligrams per kilogram – mg/kg), the hydrocarbons were not mobile or very volatile and thus did not represent a risk to site users or groundwater. However, the presence of the approximately 6,000 cubic yards of the material, at a depth as shallow as 3 feet below the surface, covering nearly an acre, will limit future site use and thus remediation of the oily sands is warranted and included in SGI’s plans for site restoration.

The remediation of soil and groundwater and the removal of light non-aqueous phase liquids (LNAPL, also referred to as free phase hydrocarbons or free product) has been on-going since 1994 and has resulted in the removal of the majority of the LNAPL from the shallow aquifer and the removal and destruction of thousands of pounds of hydrocarbons present in soil and groundwater using extractive and *in situ* treatment methods.

However, a significant mass of hydrocarbons remains present in shallow and deep vadose zone soil. The presence of the hydrocarbons in the shallow soil limits the reuse of the site. The presence of hydrocarbons in the deeper soils provides a continuing source of groundwater contamination. To achieve the short-term goal of readying the site for redevelopment and re-use and to reach the ultimate goal of obtaining closure from the Regional Water Quality Control Board

(RWQCB), Parsons prepared a *Conceptual Site Model and Remedial Action Evaluation for Soil, Groundwater, and LNAPL* (Remedial Plan; Parsons, 2013). In Parson's Conceptual Site Model plans were described to excavate the upper 10 feet of contaminated soil from the site. The current remediation follows the Parson's Remedial Plan, with the enhancement that deeper soil will also be excavated, and that excavated soil will be treated on site.

To execute the targeted excavation removal of a total of 44 wells is necessary as they are located within or in close proximity of the footprint of the planned excavations.

2.0 SITE GEOLOGY AND HYDROGEOLOGY

The *Conceptual Site Model and Remedial Action Evaluation for Soil, Groundwater and LNAPL* (Parsons, 2013), provides a detail description of the site geology and hydrogeology.

2.1 Site Geology

DFSP Norwalk is located between the Montebello Forebay and the Downey Plain in the Central Basin pressure area. Approximately 50 to 60 feet of alluvium (primarily sand, gravel, silt, and clay) cover the underlying Lakewood Formation in this area. Alluvial sediments exposed in the area of the site include mixtures and layers of sand, gravel, silt, and clay. The underlying Lakewood Formation consists of marine and continental gravel, sand, silt, and clay deposits, under which the the San Pedro Formation, approximately 300 feet below grade, consists of marine and continental gravel, sandy silt, silt, and clay deposits.

Lithologic logs of borings drilled during previous investigations indicate that sediments beneath the site consist of clayey silt, sandy silt, silty sand, fine to coarse-grained sand, and deeper coarse-grained sand with granitic cobbles. The top of a clay layer, preliminarily identified as the uppermost sediment layer of the Bellflower Aquitard, was encountered at a depth of approximately 55 to 65 feet during previous investigations.

2.2 Site Hydrogeology

A shallow semi-perched aquifer, consisting of silt and fine to coarse sand, exists in the alluvial sediments underlying the site. Groundwater from this semi-perched aquifer was reported between 24 and 34 feet between January and March 2010, and has been decreasing since 2010. The water level data indicate that static groundwater flow direction within this aquifer is generally toward the northwest, but is contained by the active groundwater extraction systems operating at the site. This shallow aquifer is approximately 30 to 35 feet thick, based on the reported presence of a clay layer at approximately 55 to 65 feet below grade. The Exposition Aquifer underlies the Bellflower Aqueduct. Groundwater depths within the Exposition Aquifer range between 49 and 56 feet below grade with a reported flow to the southeast.

Recent groundwater level declines in the shallow aquifer have resulted in localized increases in LNAPL thicknesses reported at the site.

3.0 PROPOSED WELL REMOVAL

This work plan only addresses well removal. A separate work plan for well replacement will be submitted prior to installation of the replacement wells.

3.1 Scope of Work

The proposed well abandonment process includes the permitting, the surveying of the wells to be removed, the utility clearance and physical removal of the wells.

3.2 Prefield Activities

SGI will perform the following permitting and preparation activities prior to removal of the wells:

- Update the site-specific health and safety plan Job Safety Assessments (JSA's) as necessary.
- Using a California Certified Surveyor, survey all groundwater wells that will be removed and subsequently are to be replaced after excavation is complete.
- SGI will coordinate with CH2M Hill as necessary for the removal of SPFF/KMEP wells.
- Notify the Regional Water Quality Control Board, Los Angeles Region (LARWQCB) and City of Norwalk a minimum of one week in advance of the planned field activities.
- Notify Underground Service Alert (USA). As required by USA, the well destruction locations will be called-in and marked-out in white paint at least two business days prior to drilling.
- Obtain the required well decommissioning permits from the LACDP.
- Perform an underground utility check using a private utility locating subcontractor. SGI and the private utility locating subcontractor will meet with CH2M Hill (the consultant for SPFF/KMEP) mark-out the well locations and clear the well location areas of potential underground utilities. SGI and CH2M Hill will work closely together with respect to utility location as well as location of conveyance piping for SFPP/KMEP wells.

3.2.1 Field Activities

SGI will supervise the removal of all wells. SGI will coordinate with KMEP's consultant CH2M Hill to ensure they are available to oversee the removal of the SFPP/KMEP wells.

Wells completed in groundwater will be over-drilled using a hollow-stem auger. Vapor extraction wells that do not extend to groundwater, and thus did not require permitting at time of installation, will be removed as part of the soil excavation activities.

The field activities for wells to be destructed via drilling include:

- Drilling equipment and support truck will be mobilized to the site.
- All equipment will be decontaminated prior to and after use at each well location.
- Wells will be over-drilled to total borehole depth to remove casing and well material within the borehole. A grout consisting of 5% bentonite and 95% cement will be pumped into the borehole via a tremie pipe through the augers to properly backfill and seal the borehole. Native soil will be placed from 5 feet bgs to the ground surface to restore the area to preexisting surface conditions.
- Soil cuttings and well materials generated during destruction will be containerized in roll-off bins; decontaminant rinse water will be contained in 55-gallon drums. A composite sample of the soil cuttings and decontaminant rinse water will be collected and sent to certified laboratory for waste disposal profiling purposes.

All waste will be disposed at an offsite, permitted facility. SGI will coordinate with the waste hauler to verify the laboratory parameters that need to be analyzed to meet waste profiling requirements.

3.3 Reporting

SGI, on behalf of DLA Energy, will submit a letter report that documents the completion of the work as described in this Work Plan. This report will include well destruction methods, a final tabulation of wells removed, copies of well decommissioning permits, and waste disposal manifests. The report will be submitted to the RWQCB and uploaded to RWQCB GeoTracker Web site.

3.4 Schedule

A firm start-date for removal of wells and the start of excavation has not been established. It is anticipated that activities will commence either late October or early-November. No monitoring wells will be removed until after the planned semi-annual monitoring event in late October.

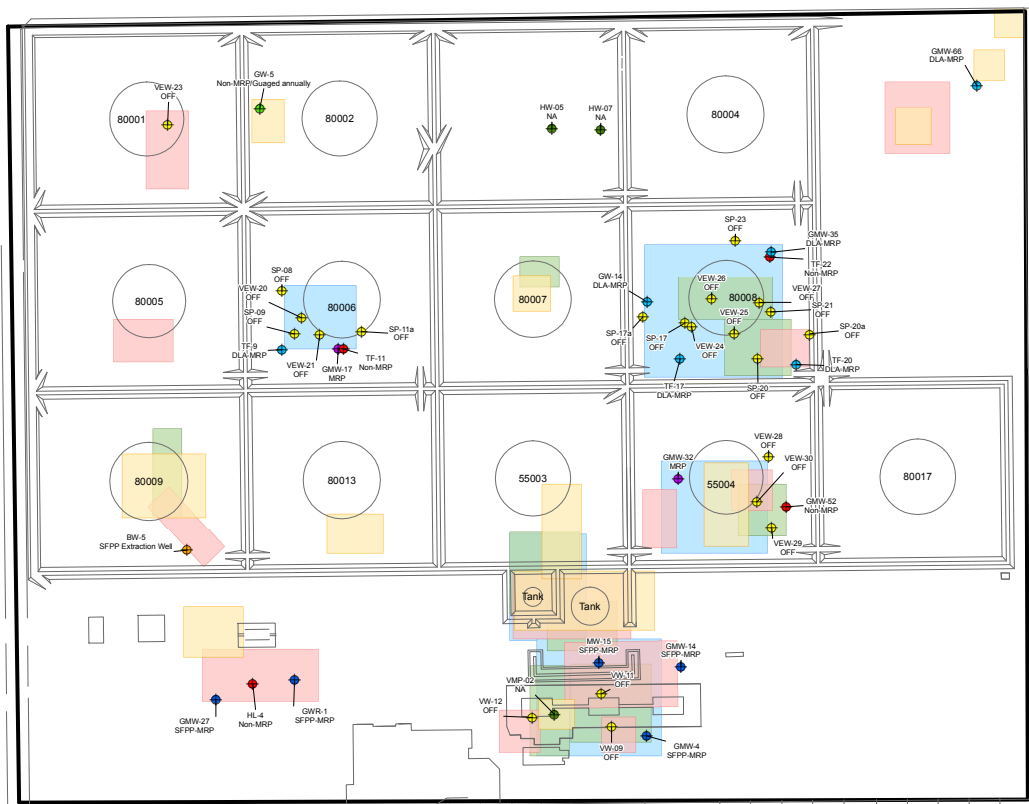
4.0 LIMITATIONS

This Work Plan was prepared for the exclusive use of Defense Logistics Agency Energy (DLA) for the express purpose of complying with regulatory directives for environmental investigation, in accordance with the scope of work, methodologies, and assumptions outlined in SGI's contract with DLA and as applicable to the location of the proposed investigation. Any re-use of this work product, in whole or in part, for a different purpose, or by others must be approved by SGI and DLA in writing. If any such unauthorized use occurs, it shall be at the user's sole risk without liability to SGI. To the extent that this plan is based on information provided to SGI by third parties, including DLA, their direct-contractors, previous workers, and other stakeholders, SGI cannot guarantee the completeness or accuracy of this information, even where efforts were made to verify third-party information. SGI has exercised professional judgment to collect and present a scope of work and opinions of a scientific and technical nature. The opinions expressed are based on the conditions of the site existing at the time of this plan preparation, current regulatory requirements, and any specified assumptions. Findings or conclusions presented in this plan are intended to be taken in their entirety to assist DLA and regulatory personnel in applying their own professional judgment in making decisions related to the property. SGI cannot provide conclusions on environmental conditions outside the completed scope of work. SGI cannot guarantee that future conditions will not change and affect the validity of the presented scope of work and any conclusions presented. No warranty or guarantee, whether expressed or implied, is made with respect to the data, observations, recommendations, and conclusions.

5.0 REFERENCES

Parsons, 2013 *Conceptual Site Model and Remedial Action Evaluation for Soil, Groundwater and LNAPL*. September 30.

FIGURES



Legend

Wells to be Removed

- Status**
- DLA-MRP
 - MRP
 - Non-MRP
 - Non-MRP/Gauged annually
 - OFF
 - SFPF Extraction Well
 - SFPF-MRP
 - NA
- Former Above Ground Storage Tanks
- Excavation 0-5ft
 - Excavation 5-10ft
 - Excavation 10-15ft
 - Excavation 15-25ft
- DFSP Norwalk Border



DFSP Norwalk			
15306 Norwalk Boulevard			
Norwalk, California			
Project Number:	Date:	Drawn By:	Approved By:
04-NDLA-007	10/14/2014	A. Czuba	K. Wall
0 75 150 300 Feet			

Well Removal Map



1962 Freeman Avenue
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(862) 597-1055

Figure

1

TABLES

Table 1
Well Removal List

Area	Well	X_NAD83	Y_NAD83	Installation Date	Casing Elevation (ft msl) ₁	Total Depth (ft bgs) ₂	Diameter	Screen Interval (ft bgs)	Remediation Well Function	Well Operation Status at End of Third Quarter 2014	Well Removal Excavation-EX Over Drill - OD
AST 80001	VEW-23	6539807.906460	1783947.298930	8/3/04	76.2	25	2	15 - 25	SVE	OFF	EX
AST 80002	GW-5	6539957.6500000	1783975.1900000	6/15/95	77.09/76.99	63	1 and 4	25.5 - 60.5	GWE	Non-MRP/Guaged annually	OD
AST 80006	SP-08	6539993.895040	1783677.726310			50	2	48 - 50	Biosparge	OFF	OD
	SP-09	6540014.181510	1783607.946410			50	2	48 - 50	Biosparge	OFF	OD
	SP-11a	6540123.480130	1783611.811410			50	2	48 - 50	Biosparge	OFF	OD
	VEW-20	6540025.893090	1783634.686940	8/2/04	75.95	25	2	15 - 25	SVE	OFF	EX
	VEW-21	6540055.112380	1783607.510690	8/2/04	75.75	25	2	15 - 25	SVE	OFF	EX
	GMW-17	6540085.3900000	1783583.5700000	8/1/91	74.66	50	4	25 - 50	GWE	DLA-MRP	OD
	TF-9	6539993.8596000	1783582.5945000	9/22/95	75.27	63	4	25-60	GWE	DLA-MRP	OD
	TF-11	6540094.4800000	1783583.6400000	9/27/95	74.95/74.4	63	1.5 and 4	25 - 60	TFE,GWE	Non-MRP	OD
AST 80008	SP-17	6540649.382330	1783626.260590			50	2	48 - 50	Biosparge	OFF	OD
	SP-17a	6540580.951360	1783635.946750			50	2	48 - 50	Biosparge	OFF	OD
	SP-20	6540767.172840	1783568.341780			50	2	48 - 50	Biosparge	OFF	OD
	SP-20a	6540851.669870	1783607.369480			50	2	48 - 50	Biosparge	OFF	OD
	SP-21	6540788.834370	1783644.171330			50	2	48 - 50	Biosparge	OFF	OD
	SP-23	6540731.467490	1783759.927570			50	2	48 - 50	Biosparge	OFF	OD
	VEW-24	6540659.780070	1783620.527260	8/2/04	76.13	25	2	15 - 25	SVE	OFF	EX
	VEW-25	6540729.265700	1783609.096120	8/2/04	76.14	25	2	15 - 25	SVE	OFF	EX
	VEW-26	6540693.062160	1783664.737530	8/4/04	77.5	25	2	15 - 25	SVE	OFF	EX
	VEW-27	6540770.526010	1783659.597290	8/4/04	77.07	25	2	15 - 25	SVE	OFF	EX
	TF-17	6540641.1000000	1783567.3100000	9/29/95	74.88	63	2	25 - 60	TFE, GWE	DLA-MRP	OD
	TF-20	6540830.1100000	1783558.3300000	10/3/95	75.59	63	2	25 - 60	TFE,GWE	DLA-MRP	OD
	TF-22	6540787.3500000	1783732.7900000	10/2/95	74.76	63	2	25 - 60	TFE, GWE	Non-MRP	OD
	GW-14	6540587.7000000	1783659.9000000	4/26/07	76.54	67	1	25 - 65	GWE	DLA-MRP	OD
	GMW-35	6540789.6895000	1783741.2268000	6/4/93	76.12	50	4	20 - 50	GWE	DLA-MRP	OD

Table 1
Well Removal List

Area	Well	X_NAD83	Y_NAD83	Installation Date	Casing Elevation (ft msl) ₁	Total Depth (ft bgs) ₂	Diameter	Screen Interval (ft bgs)	Remediation Well Function	Well Operation Status at End of Third Quarter 2014	Well Removal Excavation-EX Over Drill - OD
AST 80009	BW-5	6539839.4900000	1783256.4900000	5/23/96	73.59	52.5	5	27 - 45.5	GWE	SFPP Extraction Well	OD
AST 55004	VEW-28	6540785.313520	1783407.829640	8/3/04	75.67	25	2	25-Oct	SVE	OFF	EX
	VEW-29	6540790.195020	1783293.055780	8/3/04	75.25	25	2	10 - 25	SVE	OFF	EX
	VEW-30	6540766.427630	1783335.000850	8/3/04	75.65	25	2	10 - 25	SVE	OFF	EX
	GMW-32	6540002.7200000	1782960.1800000	8/2/91	74.62	50	4	20 - 50	GWE	MRP	OD
	GMW-52	6540814.0800000	1783326.8600000	12/19/94	75.03	41.5	4	15 - 40	GWE	Non-MRP	OD
South West corner	GWR-1	6540014.4900000	1783045.7000000	7/11/91	77.4	50	4	25 - 50	GWE	SFPP_MRP	OD
	GMW-27	6539886.1600000	1783013.7300000	1/10/92	74.41	50	4	25 - 50	GWE	SFPP_MRP	OD
	HL-4	6540033.2400000	1783194.1300000	10/16/86	75.75	39	4	18 - 38.5	GWE	Non-MRP	OD
South Central	VMP-2	6540436.781430	1782989.560610				1			OFF	EX
	VW-09	6540530.082700	1782968.315380	3/15/91	75.77	30	3	05-29	SVE	OFF	EX
	VW-11	6540513.577930	1783023.238880	3/23/04	75.55	25	2	20 - 25	SVE	OFF	EX
	VW-12	6540400.957250	1782984.608740	3/23/04	75.79	30.5	2	15 - 30	SVE	OFF	EX
	MW-15	6540509.2806000	1783073.6266000	8/7/1990	76.99	50	4	18-48	GWE	SFPP_MRP	OD
	GMW-4	6540586.6700000	1782954.4400000	5/21/91	75.45	50	4	20-50	GWE	SFPP_MRP	OD
	GMW-14	6540642.7844000	1783066.7785000	7/10/91	74.2	50	4	20 - 50	GWE	SFPP_MRP	OD
North East	GMW-66	6541123.6475000	1784012.1225000	9/8/09	77	40.5	4	20-40	GWE	DLA-MRP	OD