ARKEMA

December 14, 2005

Mr. Matt McClincy
Oregon Department of Environmental Quality
Northwest Region
2020 S.W. Fourth Avenue
Suite 400
Portland, Oregon 97201-4987

Subject: Monthly Progress Report for November 2005, Hexavalent Chromium Reduction Interim Remedial Measure (IRM), Arkema Inc., Portland Facility

Dear Mr. McClincy:

The Hexavalent Chromium Reduction IRM Work Plan, dated June 1, 2005 (Work Plan) requires submittal of monthly progress reports summarizing the status of implementation of the IRM. The following progress report summarizes activities completed in November 2005.

***Actions Completed in November 2005***

*Round 2 Calcium Polysulfide Injections*

ERM commenced Round 2 of the calcium polysulfide (CAS) injections on October 17, 2005. Injections were completed on November 18, 2005. Round 2 of the injection program included the following wells and points.

- 165 shallow-zone injection points;
- 5 injection wells (shallow-zone);
- 51 combined shallow and intermediate injection points; and
- 10 deep injection points.

Of these, 115 shallow-zone, 27 shallow and intermediate-zone, and 3 deep-zone injections were completed in November.

A total of approximately 758,247 gallons of 3% CAS were injected during Round 2, of which approximately 453,816 gallons were injected in November.

ARKEMA Inc.
6400 NW Front Avenue
Portland, Oregon 97210

503-228-7655 Fax: 503-225-7279
www.arkemagroup.com

*Changes to Work Plan Scope*

No changes to the scope of work were proposed during this reporting period.

***Actions Scheduled for December 2005***

The first monthly performance monitoring of Round 2 will commence on or about December 6, 2005. No other activities are planned for December 2005.

***Groundwater Potentiometric Surface***

Groundwater elevations were not measured during November 2005.

***Groundwater Laboratory Parameters***

Groundwater laboratory parameters for baseline, 1st, 2nd, and 3rd monthly performance-monitoring events have previously been presented in a table format. Hexavalent chromium concentration contour maps for the shallow-, intermediate-, and deep-zone aquifers, during the baseline, 1st, 2nd, and 3rd monthly performance monitoring rounds, are included as Figures 1 to 12. The concentrations of other selected analytes in the shallow-, intermediate-, and deep-zone aquifers, for the baseline, 1st, 2nd, and 3rd monthly performance monitoring rounds were plotted on maps and are presented as Figures 13 to 21.

***Groundwater Field Parameters***

Groundwater field parameters measured in the shallow-, intermediate-, and deep-zone aquifers, during the baseline, 1st, 2nd, and 3rd monthly performance-monitoring events were plotted on maps and are included as Figures 22, 23, and 24.

If you have any questions or require additional information, please feel free to contact me at (503) 225-7210.

Sincerely,

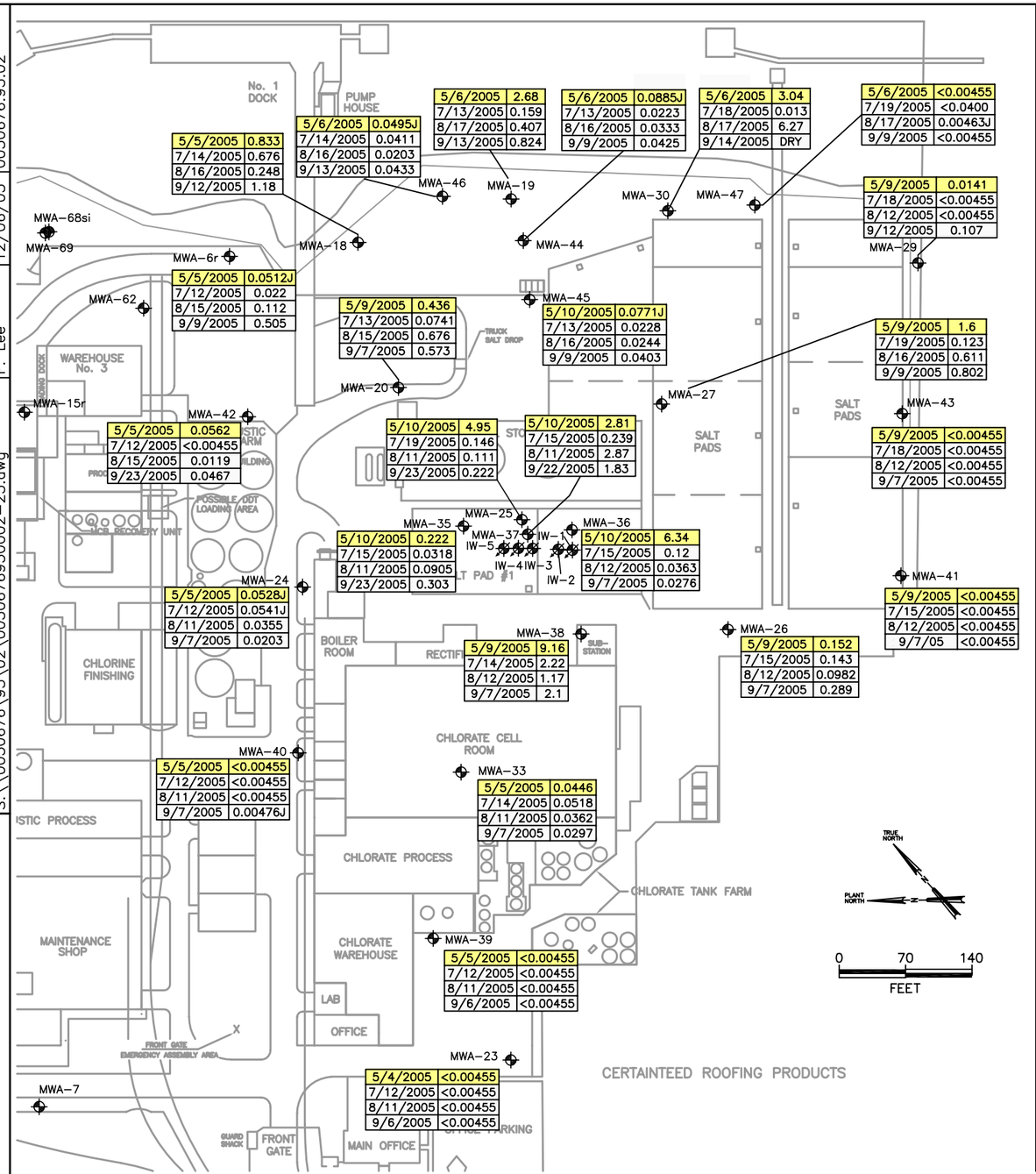
Arkema Inc.

Larry D. Patterson, P.E.
Environmental Manager

Attachment

cc: Todd Slater, Arkema, Inc.
Robert Wright, Arkema, Inc.
William Park, ERM

Project No. 0030676.93.02
Date: 12/06/05
Drawn By: F. Lee
CAD File: S:\0030676\93\02\0030676930002-25.dwg




| | |
|---|---|
| 5/5/2005 | 0.833 |
| 7/14/2005 | 0.676 |
| 8/16/2005 | 0.248 |
| 9/12/2005 | 1.18 |

| | |
|---|---|
| 5/6/2005 | 0.0495J |
| 7/14/2005 | 0.0411 |
| 8/16/2005 | 0.0203 |
| 9/13/2005 | 0.0433 |

| | |
|---|---|
| 5/6/2005 | 2.68 |
| 7/13/2005 | 0.159 |
| 8/17/2005 | 0.407 |
| 9/13/2005 | 0.824 |

| | |
|---|---|
| 5/6/2005 | 0.0885J |
| 7/13/2005 | 0.0223 |
| 8/16/2005 | 0.0333 |
| 9/9/2005 | 0.0425 |

| | |
|---|---|
| 5/6/2005 | 3.04 |
| 7/18/2005 | 0.013 |
| 8/17/2005 | 6.27 |
| 9/14/2005 | DRY |

| | |
|---|---|
| 5/6/2005 | <0.00455 |
| 7/19/2005 | <0.0400 |
| 8/17/2005 | 0.00463J |
| 9/9/2005 | <0.00455 |

| | |
|---|---|
| 5/9/2005 | 0.0141 |
| 7/18/2005 | <0.00455 |
| 8/12/2005 | <0.00455 |
| 9/12/2005 | 0.107 |

| | |
|---|---|
| 5/5/2005 | 0.0512J |
| 7/12/2005 | 0.022 |
| 8/15/2005 | 0.112 |
| 9/9/2005 | 0.505 |

| | |
|---|---|
| 5/9/2005 | 0.436 |
| 7/13/2005 | 0.0741 |
| 8/15/2005 | 0.676 |
| 9/7/2005 | 0.573 |

| | |
|---|---|
| 5/10/2005 | 0.0771J |
| 7/13/2005 | 0.0228 |
| 8/16/2005 | 0.0244 |
| 9/9/2005 | 0.0403 |

| | |
|---|---|
| 5/9/2005 | 1.6 |
| 7/19/2005 | 0.123 |
| 8/16/2005 | 0.611 |
| 9/9/2005 | 0.802 |

| | |
|---|---|
| 5/5/2005 | 0.0562 |
| 7/12/2005 | <0.00455 |
| 8/15/2005 | 0.0119 |
| 9/23/2005 | 0.0467 |

| | |
|---|---|
| 5/10/2005 | 4.95 |
| 7/19/2005 | 0.146 |
| 8/11/2005 | 0.111 |
| 9/23/2005 | 0.222 |

| | |
|---|---|
| 5/10/2005 | 2.81 |
| 7/15/2005 | 0.239 |
| 8/11/2005 | 2.87 |
| 9/22/2005 | 1.83 |

| | |
|---|---|
| 5/9/2005 | <0.00455 |
| 7/18/2005 | <0.00455 |
| 8/12/2005 | <0.00455 |
| 9/7/2005 | <0.00455 |

| | |
|---|---|
| 5/10/2005 | 0.222 |
| 7/15/2005 | 0.0318 |
| 8/11/2005 | 0.0905 |
| 9/23/2005 | 0.303 |

| | |
|---|---|
| 5/10/2005 | 6.34 |
| 7/15/2005 | 0.12 |
| 8/12/2005 | 0.0363 |
| 9/7/2005 | 0.0276 |

| | |
|---|---|
| 5/5/2005 | 0.0528J |
| 7/12/2005 | 0.0541J |
| 8/11/2005 | 0.0355 |
| 9/7/2005 | 0.0203 |

| | |
|---|---|
| 5/9/2005 | <0.00455 |
| 7/15/2005 | <0.00455 |
| 8/12/2005 | <0.00455 |
| 9/7/05 | <0.00455 |

| | |
|---|---|
| 5/9/2005 | 9.16 |
| 7/14/2005 | 2.22 |
| 8/12/2005 | 1.17 |
| 9/7/2005 | 2.1 |

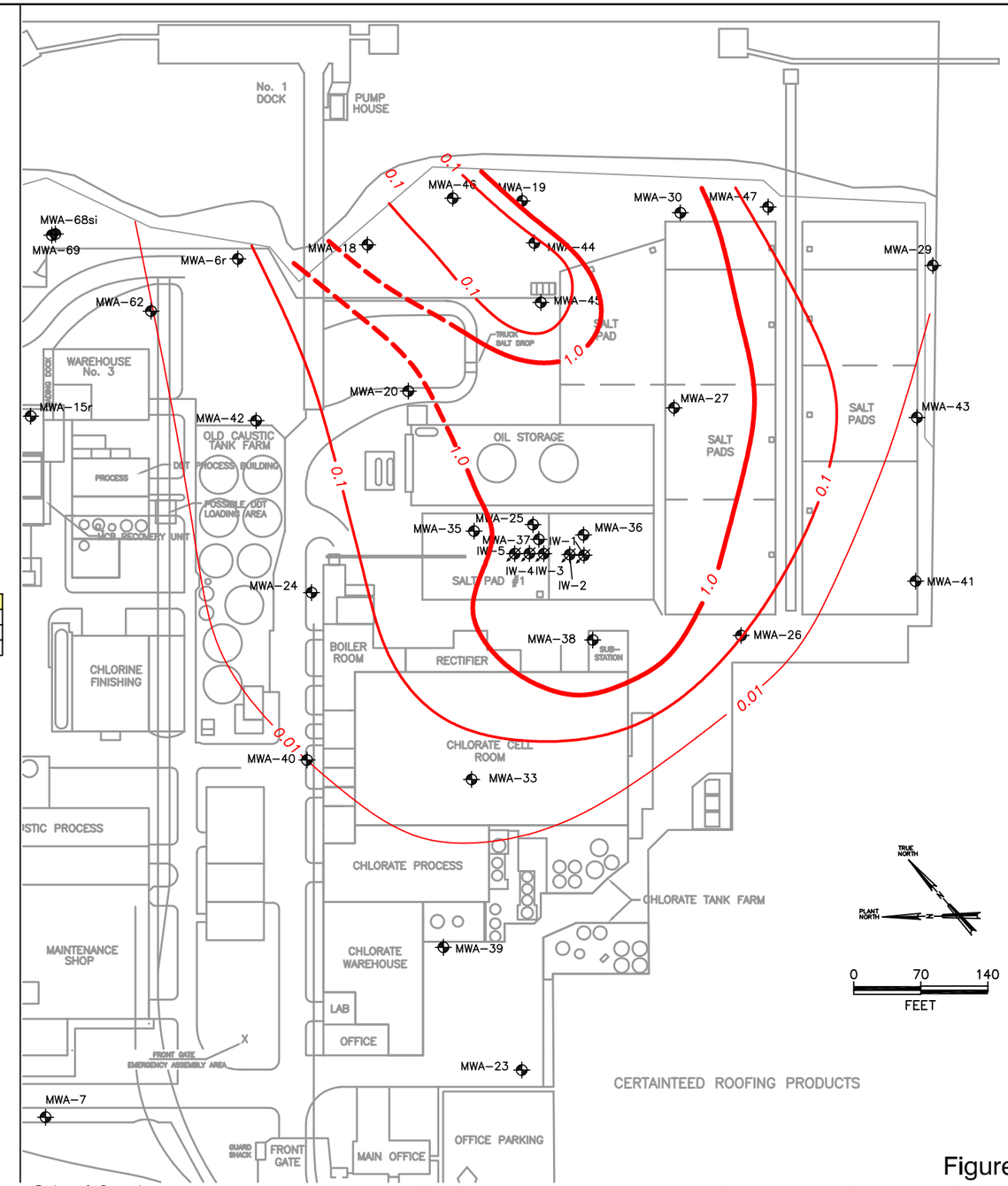
| | |
|---|---|
| 5/9/2005 | 0.152 |
| 7/15/2005 | 0.143 |
| 8/12/2005 | 0.0982 |
| 9/7/2005 | 0.289 |

| | |
|---|---|
| 5/5/2005 | <0.00455 |
| 7/12/2005 | <0.00455 |
| 8/11/2005 | <0.00455 |
| 9/7/2005 | 0.00476J |

| | |
|---|---|
| 5/5/2005 | 0.0446 |
| 7/14/2005 | 0.0518 |
| 8/11/2005 | 0.0362 |
| 9/7/2005 | 0.0297 |

| | |
|---|---|
| 5/5/2005 | <0.00455 |
| 7/12/2005 | <0.00455 |
| 8/11/2005 | <0.00455 |
| 9/6/2005 | <0.00455 |

| | |
|---|---|
| 5/4/2005 | <0.00455 |
| 7/12/2005 | <0.00455 |
| 8/11/2005 | <0.00455 |
| 9/6/2005 | <0.00455 |




LEGEND

Monitoring Well, Shallow Zone

Injection Well, Shallow Zone

0.1 Hexavalent Chromium Concentration Contour (mg/L); Shallow Zone (May 2005)

Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.
Highlighted data used to create concentration contour.

Date of Sample
Hexavalent Chromium Concentration (mg/L)

| | | |
|---|---|---|
| 5/6/2005 | <0.00455 | –Baseline Monitoring (May 2005) |
| 7/19/2005 | <0.0400 | –Round 1 Performance Monitoring (July 2005) |
| 8/17/2005 | 0.00463J | –Round 2 Performance Monitoring (August 2005) |
| 9/9/2005 | <0.00455 | –Round 3 Performance Monitoring (September 2005) |

Figure 1

*Performance Groundwater Monitoring Results - Baseline*
*Shallow Zone Hexavalent Chromium Concentration*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

| CAD File: | Drawn By: | Date: | Project No. |
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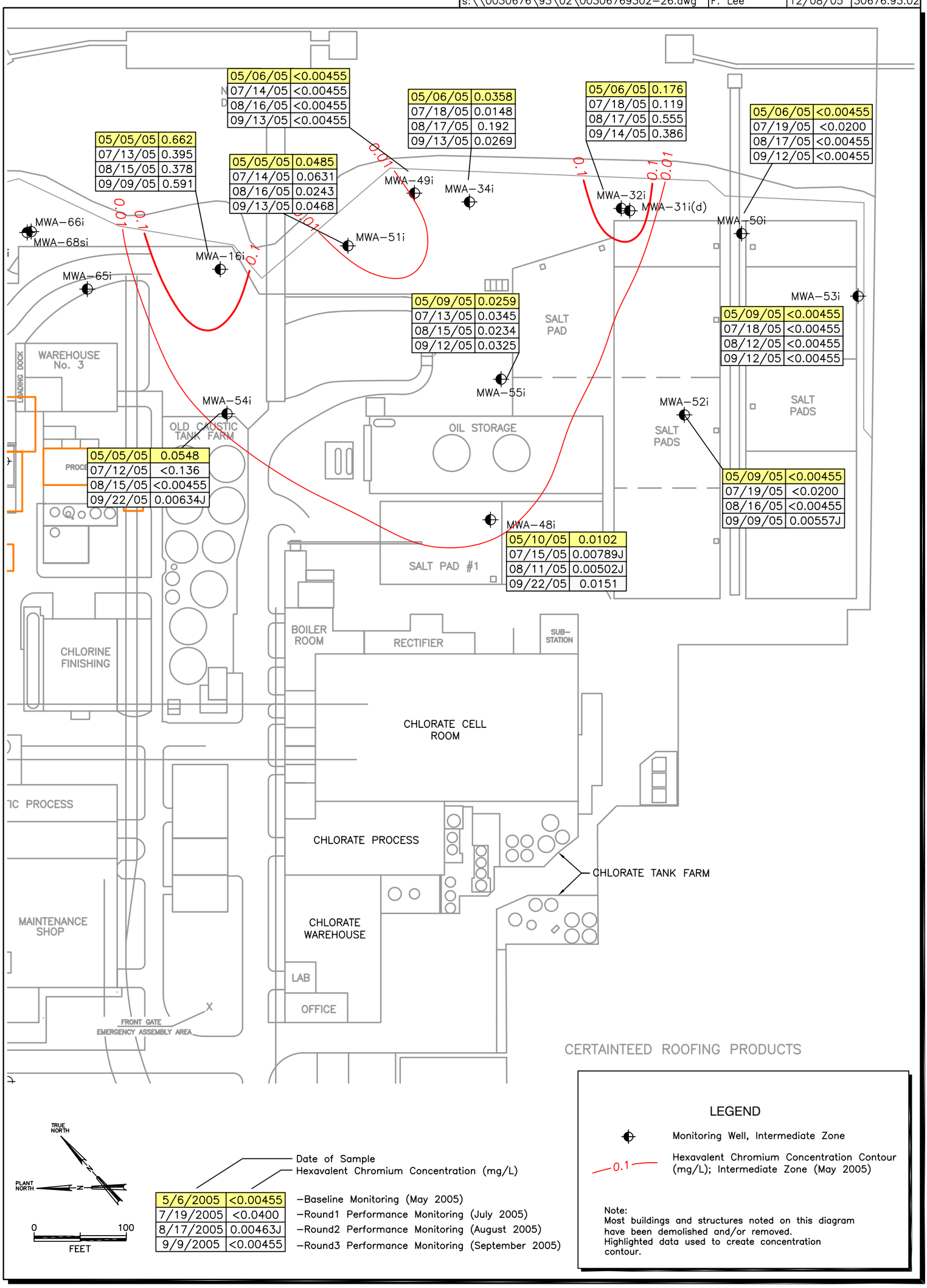


Figure 2

*Performance Groundwater Monitoring Results - Baseline Intermediate Zone Hexavalent Chromium Concentration*

*Arkema Inc.*

*Portland, Oregon*

ERM 12/05

| CAD File: | Drawn By: | Date: | Project No. |
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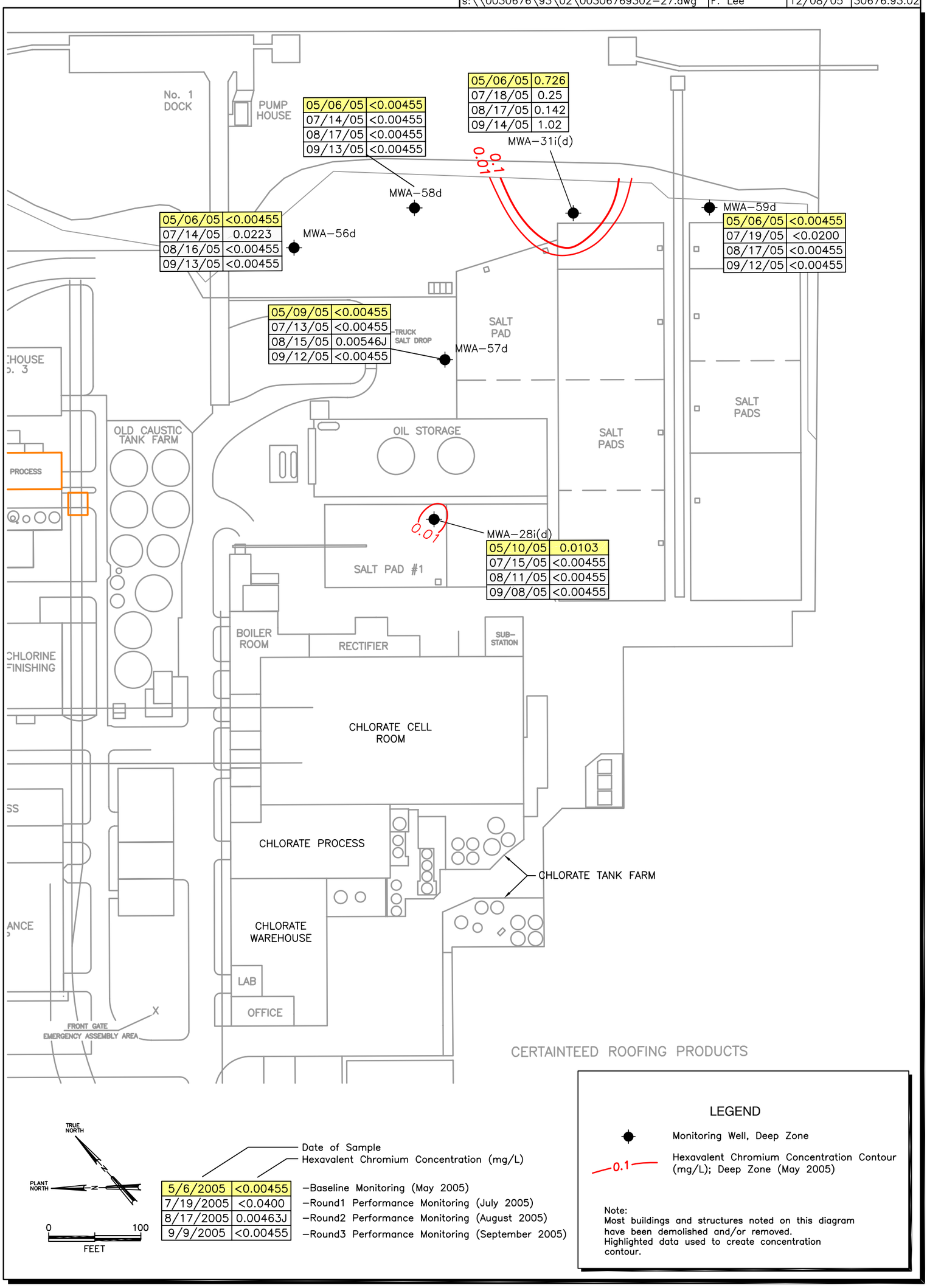


Figure 3

*Performance Groundwater Monitoring Results - Baseline*
*Deep Zone Hexavalent Chromium Concentration*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

Project No. 0030676.93.02
Date: 12/06/05
Drawn By: F. Lee
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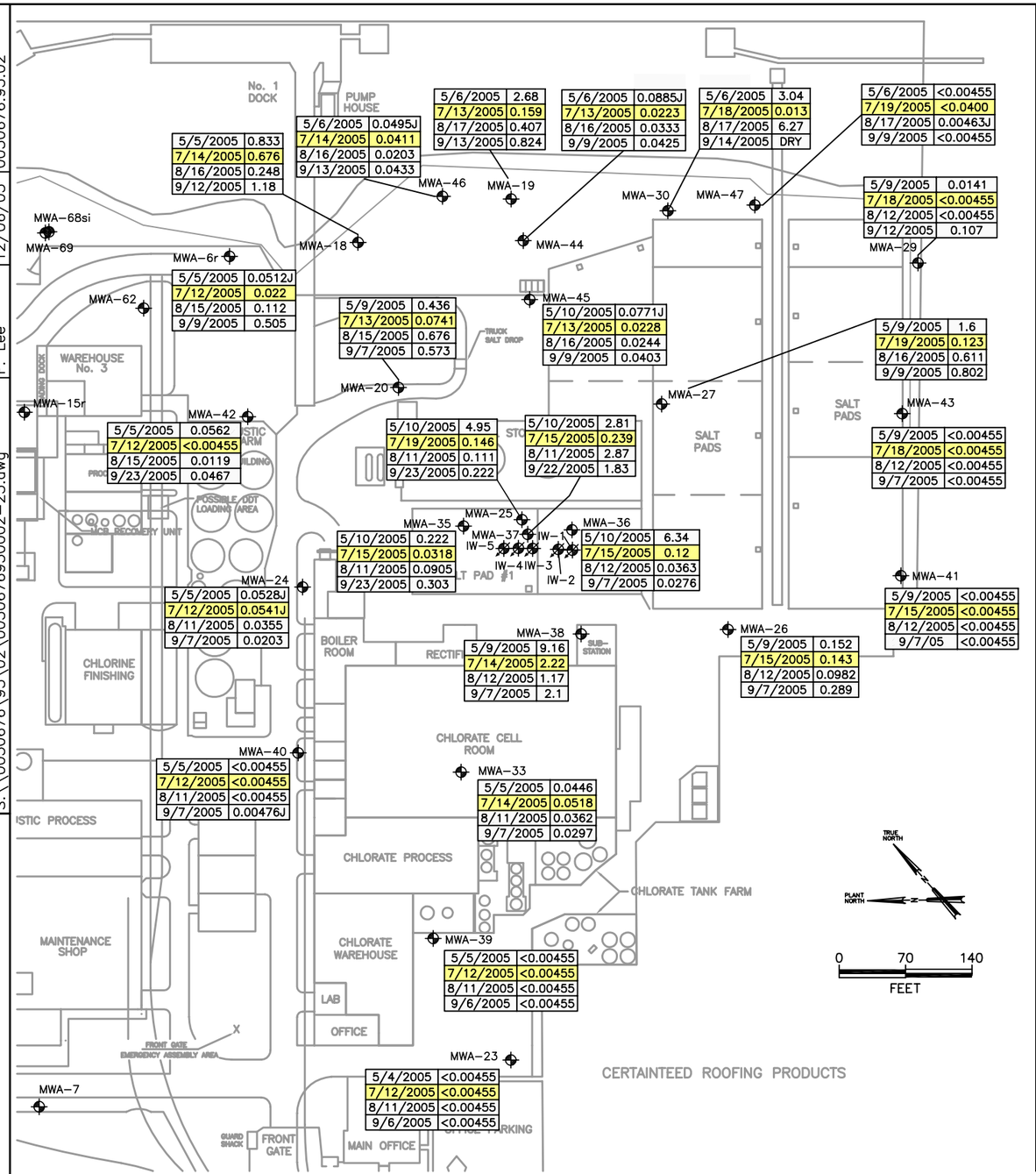


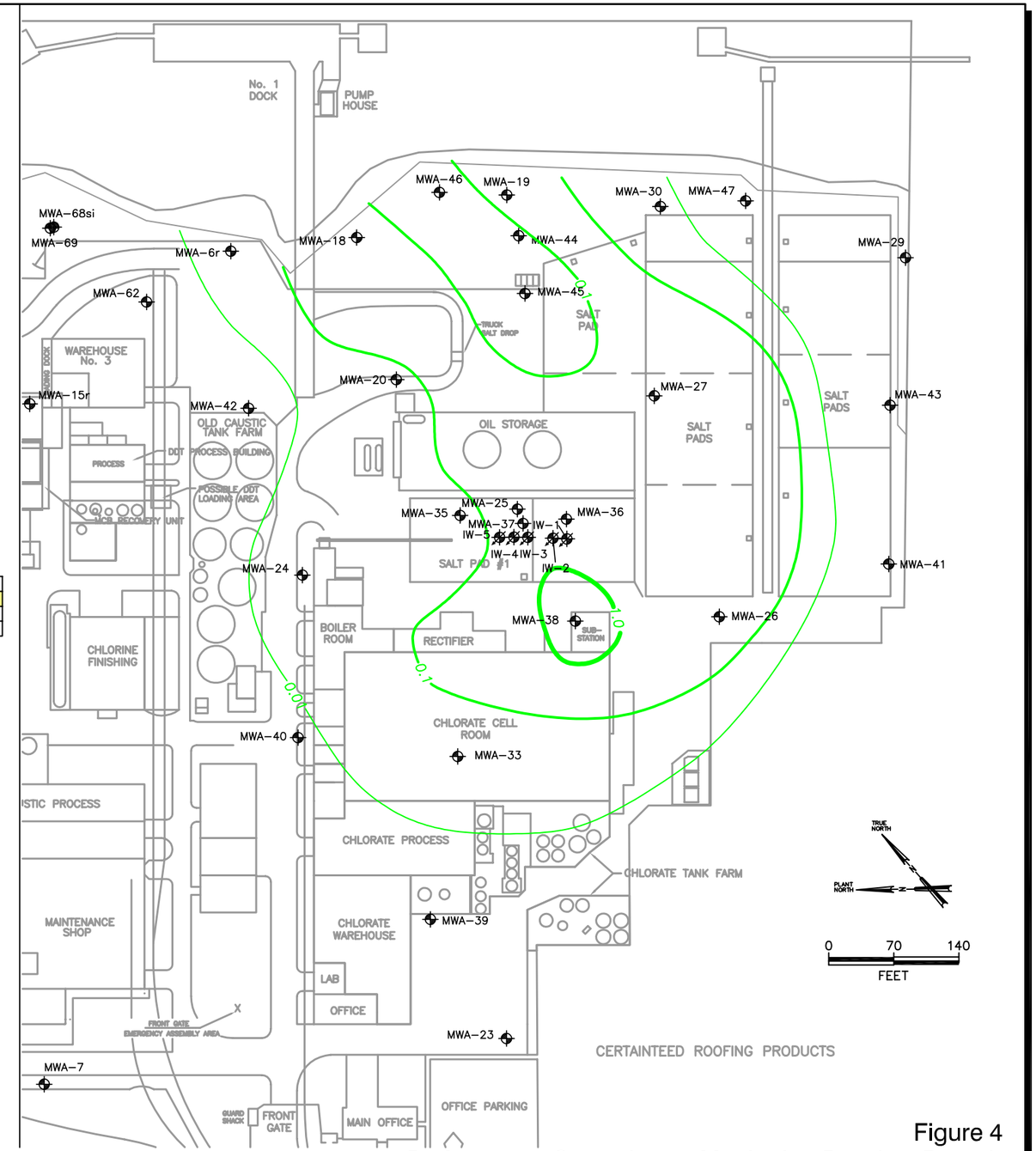


LEGEND

Monitoring Well, Shallow Zone

Injection Well, Shallow Zone

0.1 — Hexavalent Chromium Concentration Contour (mg/L); Shallow Zone (May 2005)

Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.
Highlighted data used to create concentration contour.

Date of Sample
Hexavalent Chromium Concentration (mg/L)

| | | |
|---|---|---|
| 5/6/2005 | <0.00455 | –Baseline Monitoring (May 2005) |
| 7/19/2005 | <0.0400 | –Round 1 Performance Monitoring (July 2005) |
| 8/17/2005 | 0.00463J | –Round 2 Performance Monitoring (August 2005) |
| 9/9/2005 | <0.00455 | –Round 3 Performance Monitoring (September 2005) |

Figure 4

*Performance Groundwater Monitoring Results - Round 1*
*Shallow Zone Hexavalent Chromium Concentration*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

| CAD File: | Drawn By: | Date: | Project No. |
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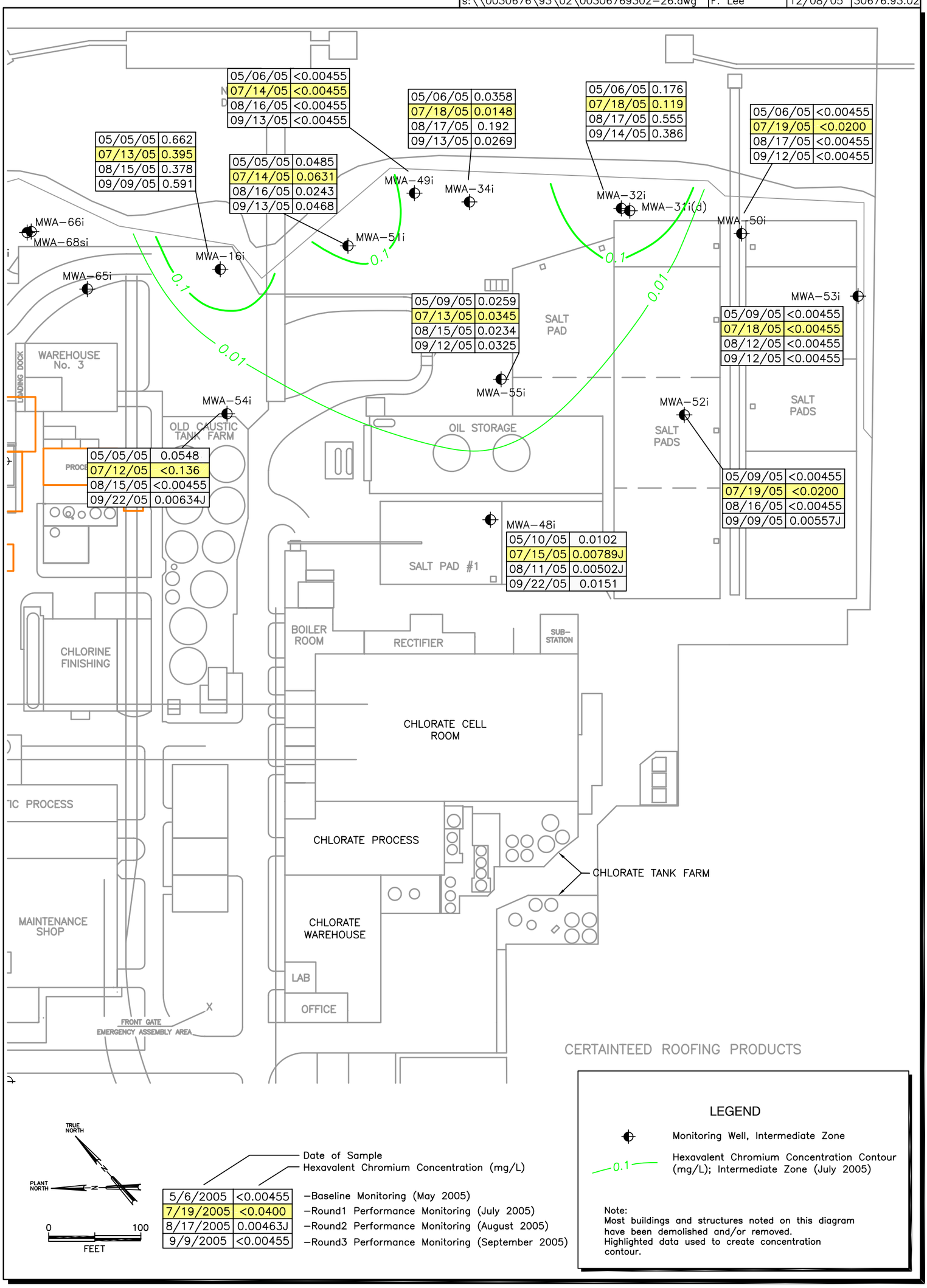


Figure 5

*Performance Groundwater Monitoring Results - Round 1*
*Intermediate Zone Hexavalent Chromium Concentration*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

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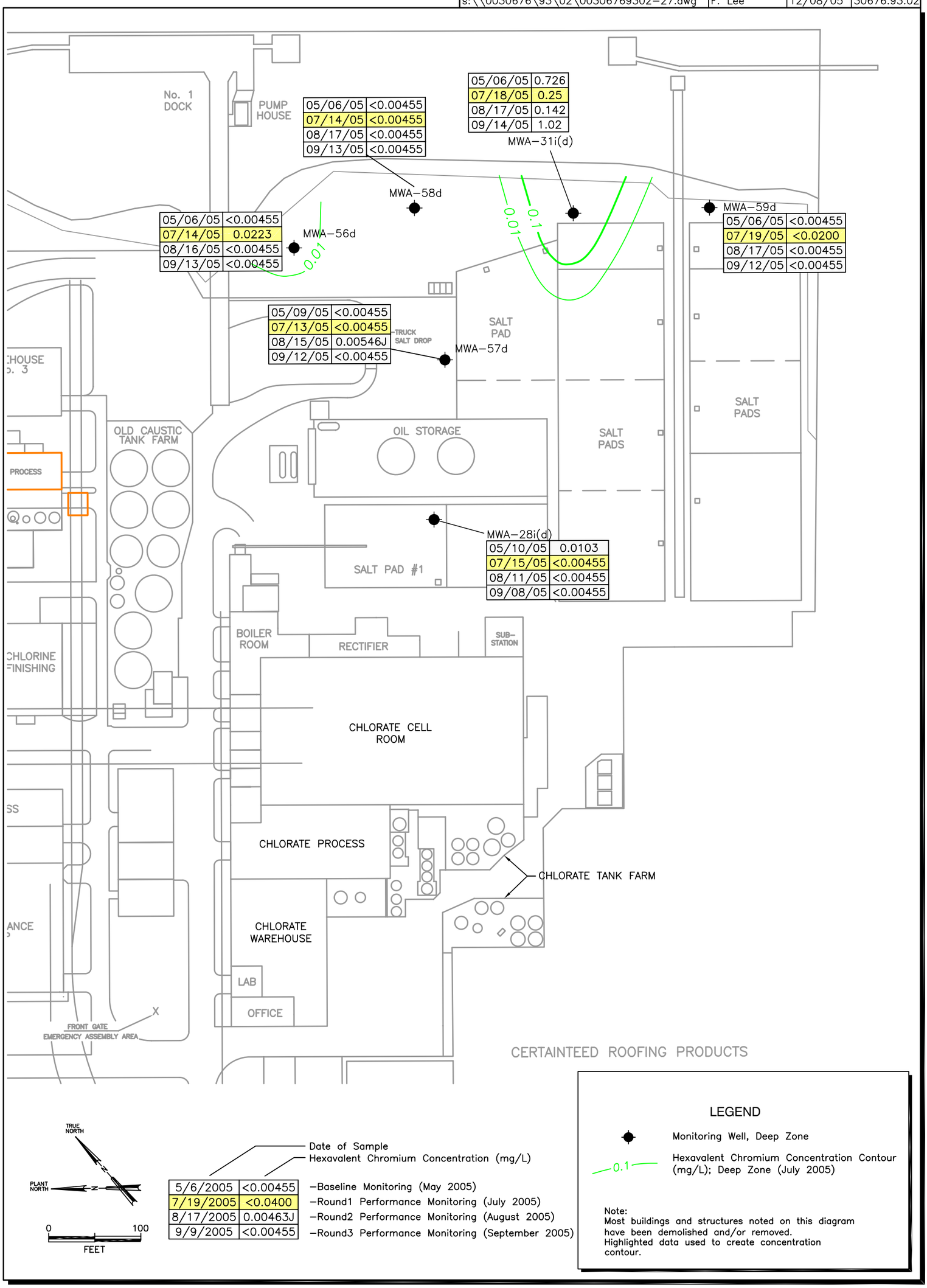


Figure 6

*Performance Groundwater Monitoring Results - Round 1*
*Deep Zone Hexavalent Chromium Concentration*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

Project No. 0030676.93.02
Date: 12/06/05
Drawn By: F. Lee
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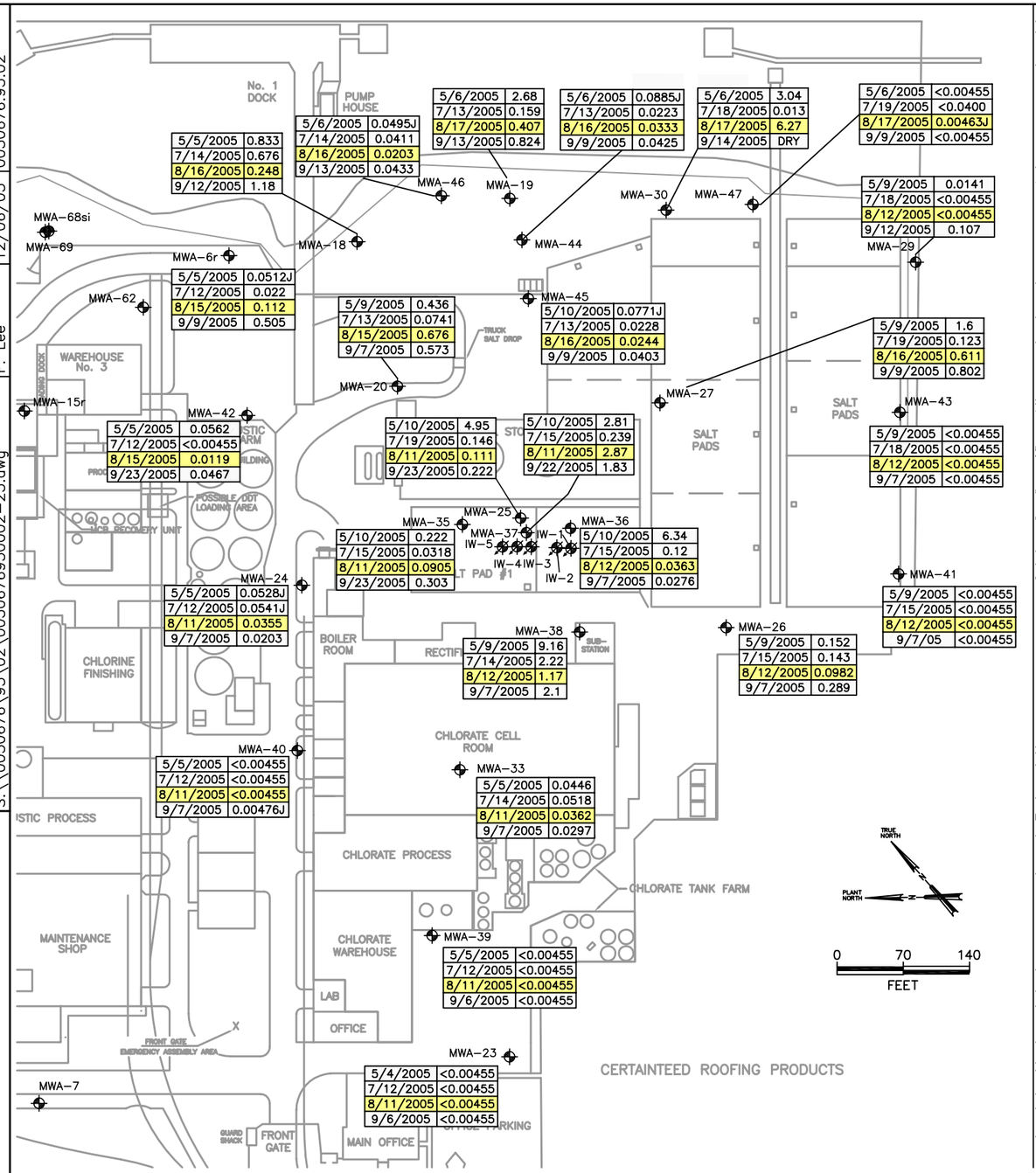


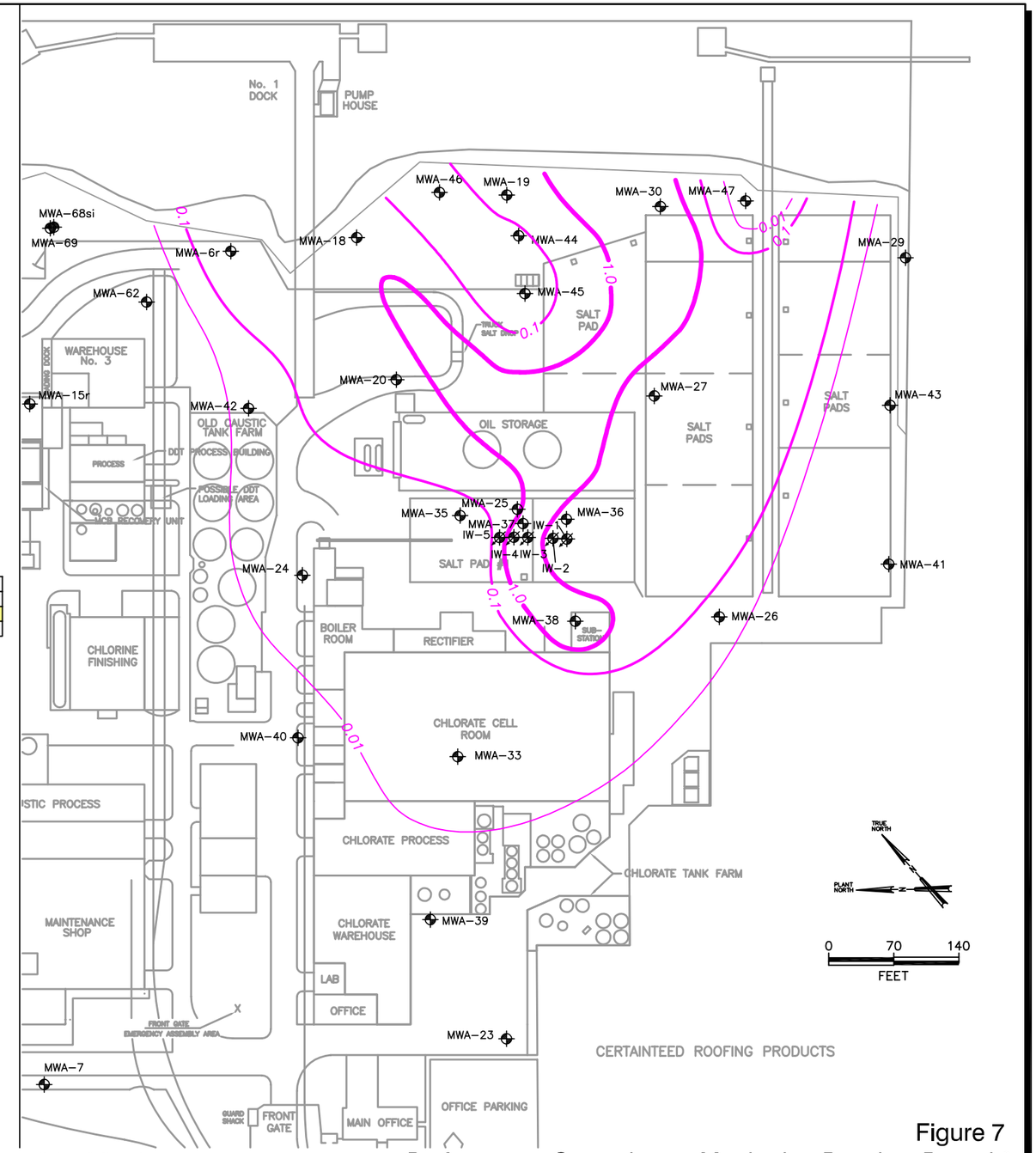


LEGEND

- Monitoring Well, Shallow Zone
- Injection Well, Shallow Zone
- 0.1 — Hexavalent Chromium Concentration Contour (mg/L); Shallow Zone (May 2005)

Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.
Highlighted data used to create concentration contour.

| Date of Sample | Hexavalent Chromium Concentration (mg/L) | |
|---|---|---|
| 5/6/2005 | <0.00455 | –Baseline Monitoring (May 2005) |
| 7/19/2005 | <0.0400 | –Round 1 Performance Monitoring (July 2005) |
| 8/17/2005 | 0.00463J | –Round 2 Performance Monitoring (August 2005) |
| 9/9/2005 | <0.00455 | –Round 3 Performance Monitoring (September 2005) |

Figure 7
*Performance Groundwater Monitoring Results - Round 2*
*Shallow Zone Hexavalent Chromium Concentration*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

| CAD File: | Drawn By: | Date: | Project No. |
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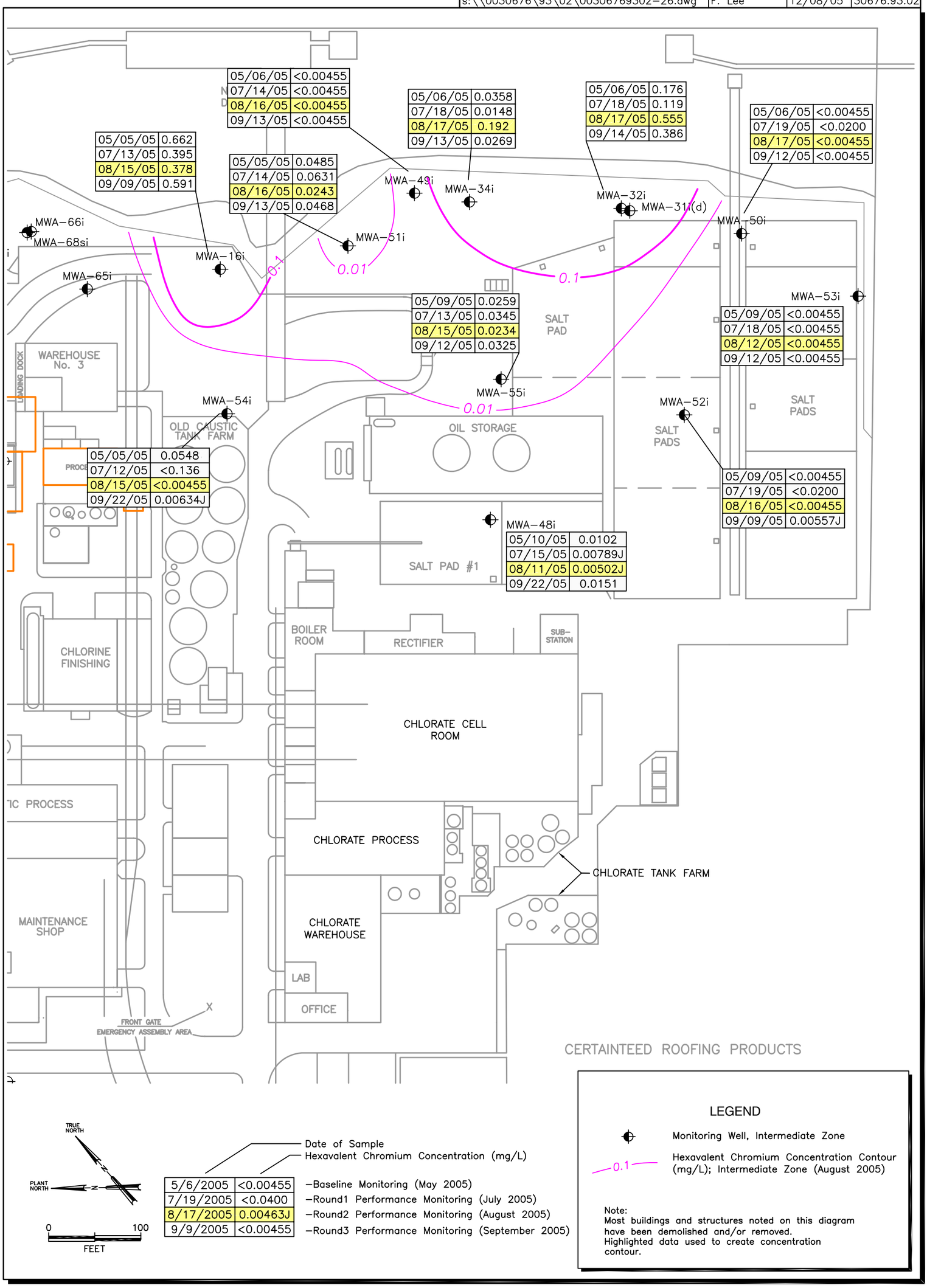


Figure 8

*Performance Groundwater Monitoring Results - Round 2*
*Intermediate Zone Hexavalent Chromium Concentration*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

| CAD File: | Drawn By: | Date: | Project No. |
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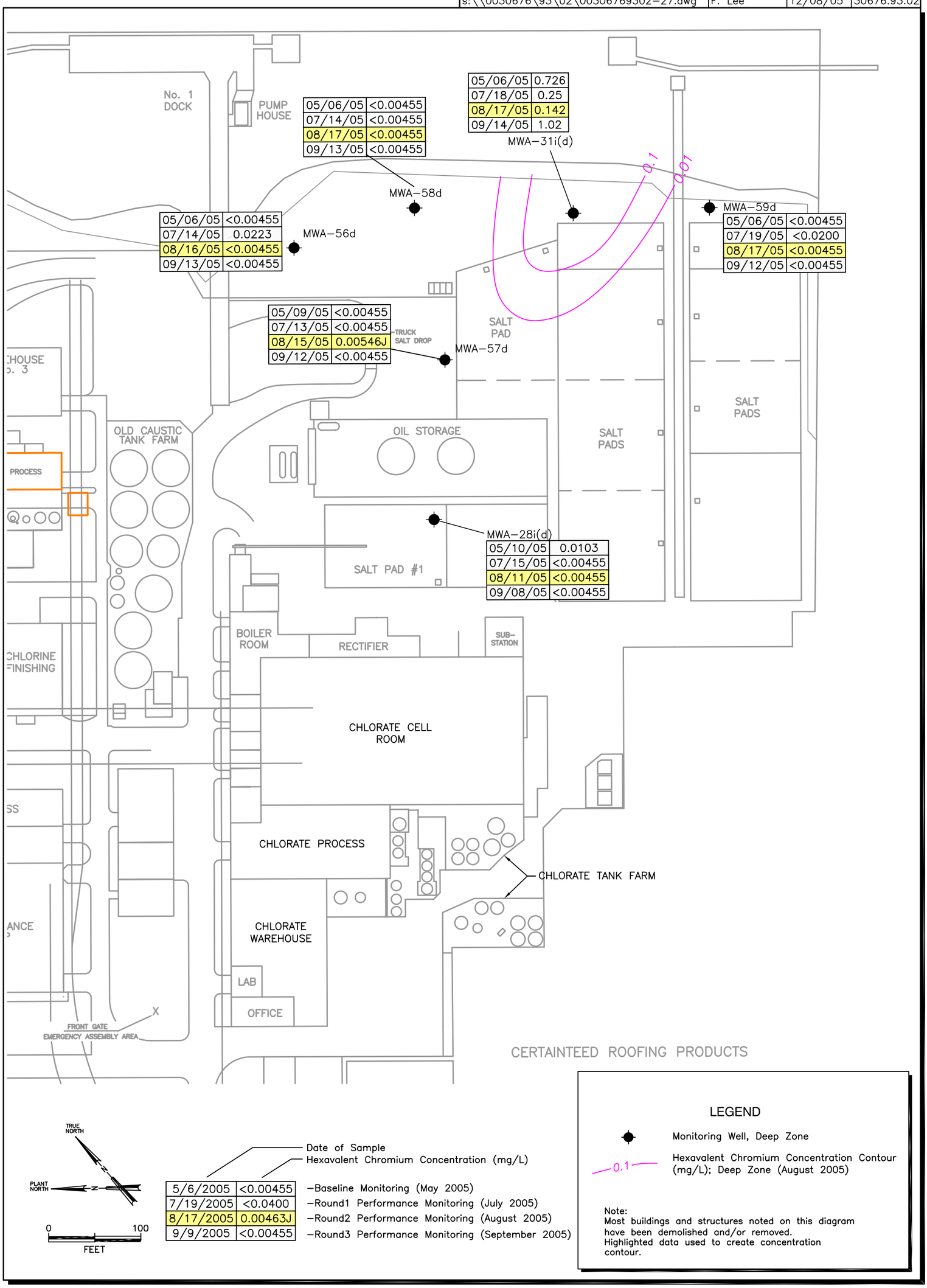


Figure 9

*Performance Groundwater Monitoring Results - Round 2*
*Deep Zone Hexavalent Chromium Concentration*
*Arkema Inc.*
*Portland, Oregon*

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Project No. 0030676.93.02
Date: 12/06/05
Drawn By: F. Lee
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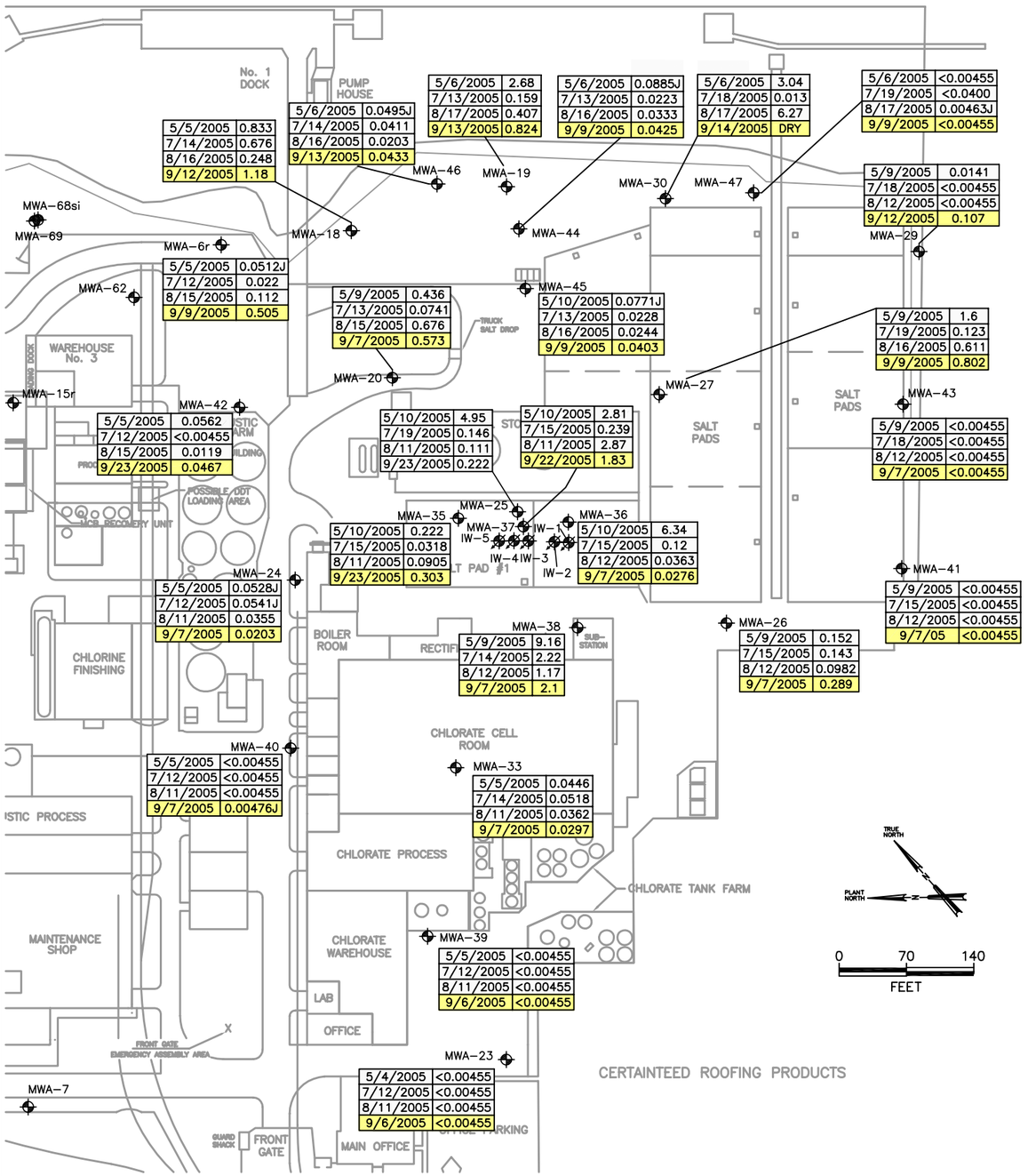


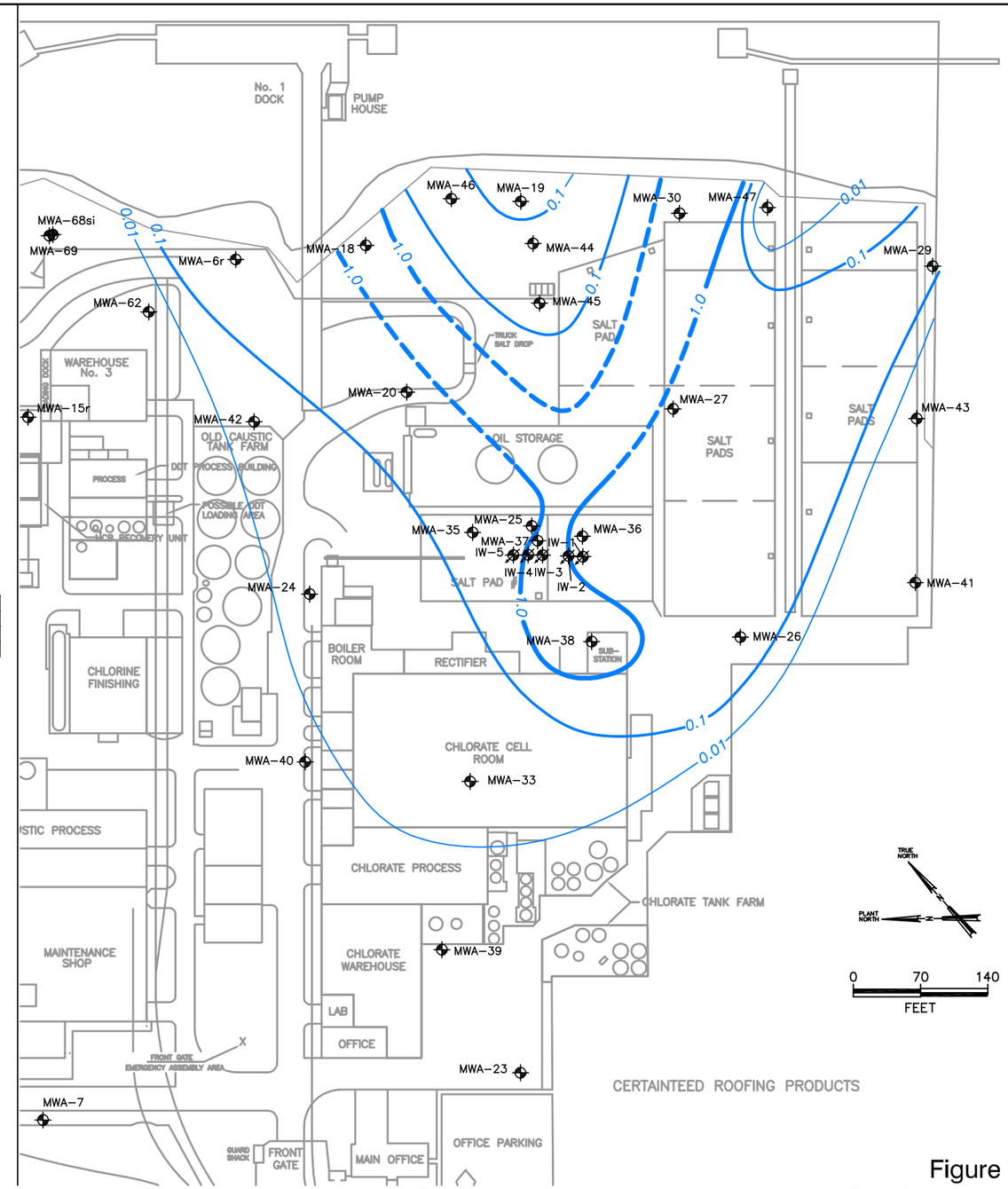


LEGEND

- Monitoring Well, Shallow Zone
- Injection Well, Shallow Zone
- 0.1 — Hexavalent Chromium Concentration Contour (mg/L); Shallow Zone (May 2005)

Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.
Highlighted data used to create concentration contour.

Date of Sample
Hexavalent Chromium Concentration (mg/L)

| | | |
|---|---|---|
| 5/6/2005 | <0.00455 | –Baseline Monitoring (May 2005) |
| 7/19/2005 | <0.0400 | –Round 1 Performance Monitoring (July 2005) |
| 8/17/2005 | 0.00463J | –Round 2 Performance Monitoring (August 2005) |
| 9/9/2005 | <0.00455 | –Round 3 Performance Monitoring (September 2005) |

Figure 10

*Performance Groundwater Monitoring Results - Round 3*
*Shallow Zone Hexavalent Chromium Concentration*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

| CAD File: | Drawn By: | Date: | Project No. |
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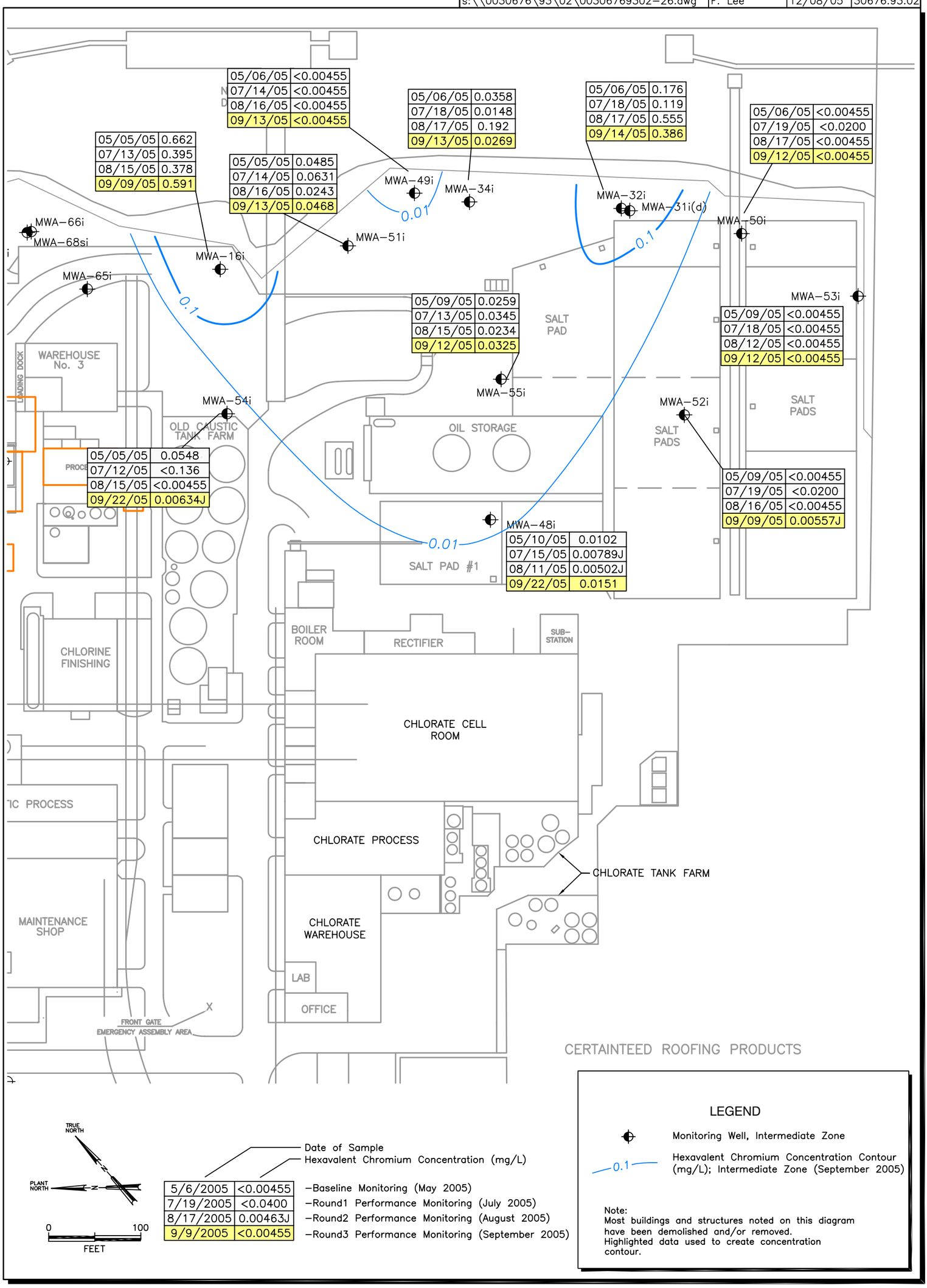


Figure 11

*Performance Groundwater Monitoring Results - Round 3*
*Intermediate Zone Hexavalent Chromium Concentration*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

| CAD File: | Drawn By: | Date: | Project No. |
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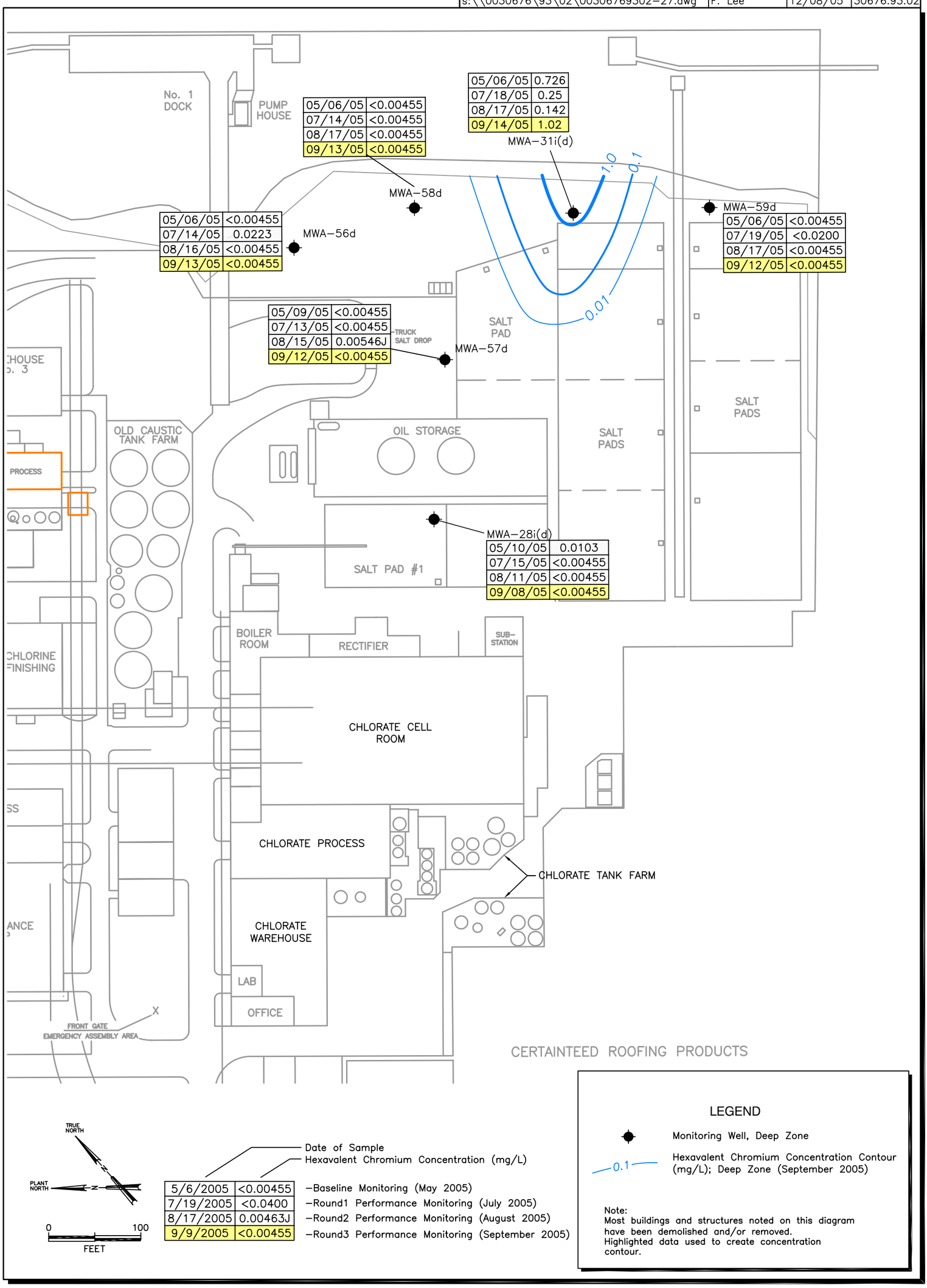
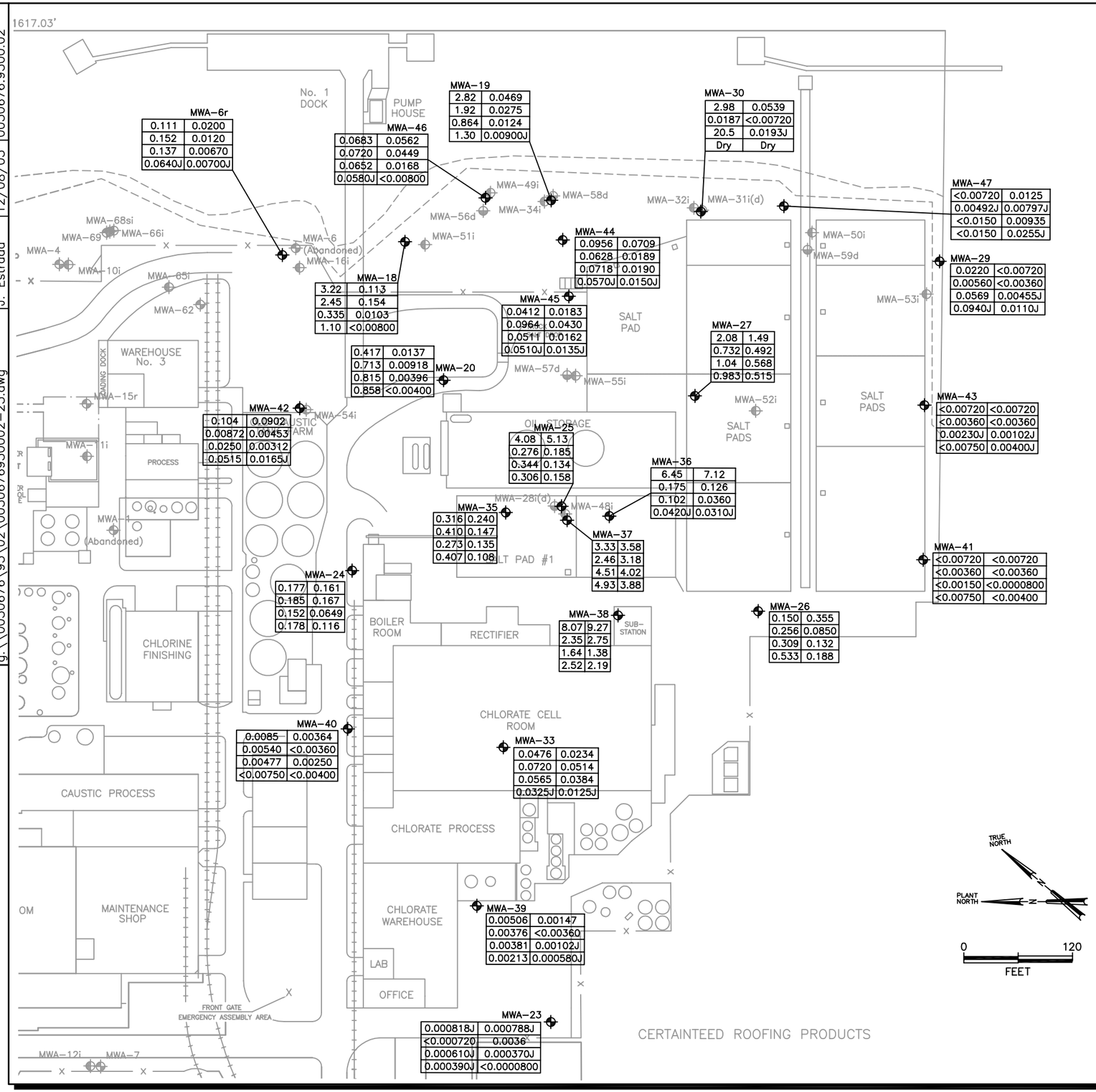



Figure 12

*Performance Groundwater Monitoring Results - Round 3*
*Deep Zone Hexavalent Chromium Concentration*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

Project No. 0030676.9300.02
Date: 12/08/05
Drawn By: J. Estrada
CAD File: g:\0030676\93\02\0030676930002-25.dwg




## LEGEND

- Monitoring Well, Shallow Zone
- Montoring Well, Intermediate Zone
- Monitoring Well, Deep Zone
- (d) Indicates Intermediate Zone Well Actually Completed in the Deep Zone
- Dry Insufficient Groundwater In Well to Collect a Sample
- Williamette River Bank

Total Chromium (mg/L)
Dissolved Chromium (mg/L)

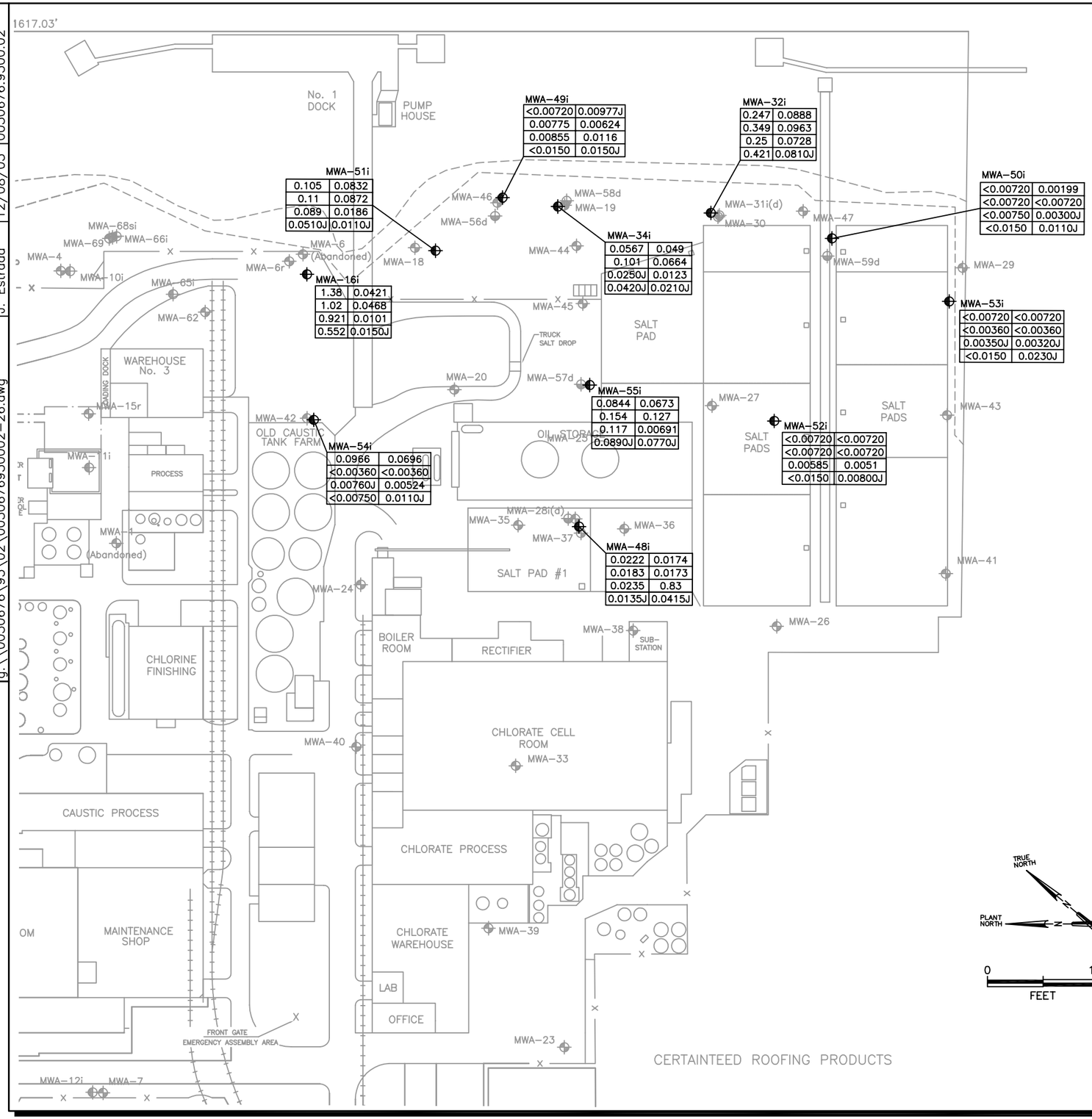
| | | |
|---|---|---|
| <0.00720 | <0.00720 | Sample Baseline (May 2005) |
| <0.00360 | <0.00360 | Sample Phase 1, Round 1 (July 2005) |
| 0.00230J | 0.00102J | Sample Phase 1, Round 2 (August 2005) |
| <0.00750 | 0.00400J | Sample Phase 1, Round 3 (September 2005) |

Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.

Figure 13
*Shallow Zone Total Chromium and Dissolved Chromium Concentrations*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

Project No. 0030676.9300.02
Date: 12/08/05
Drawn By: J. Estrada
CAD File: g:\0030676\93\02\0030676930002-26.dwg




## LEGEND

- Monitoring Well, Shallow Zone
- Montoring Well, Intermediate Zone
- Monitoring Well, Deep Zone
- (d) Indicates Intermediate Zone Well Actually Completed in the Deep Zone
- Williamette River Bank

| Total Chromium (mg/L) | Dissolved Chromium (mg/L) | |
|---|---|---|
| <0.00720 | <0.00720 | Sample Baseline (May 2005) |
| <0.00360 | <0.00360 | Sample Phase 1, Round 1 (July 2005) |
| 0.00230J | 0.00102J | Sample Phase 1, Round 2 (August 2005) |
| <0.00750 | 0.00400J | Sample Phase 1, Round 3 (September 2005) |

Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.

TRUE NORTH
PLANT NORTH
0 120
FEET

Figure 14
*Intermediate Zone Total Chromium and Dissolved Chromium Concentrations*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

Project No. 00306676.9300.02
Date: 12/08/05
Drawn By: J. Estrada
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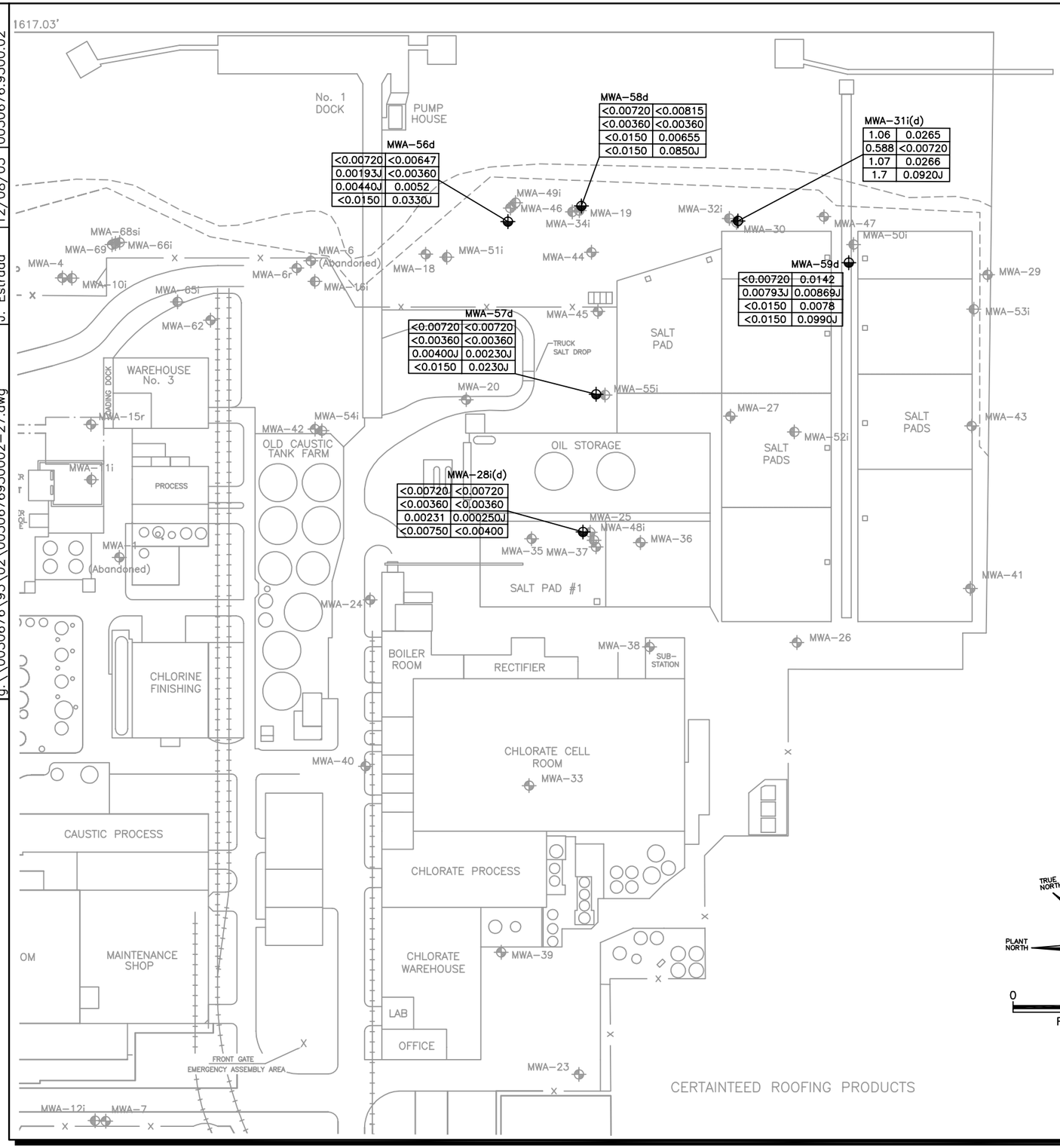



## LEGEND

- Monitoring Well, Shallow Zone
- Montoring Well, Intermediate Zone
- Monitoring Well, Deep Zone
- (d) Indicates Intermediate Zone Well Actually Completed in the Deep Zone
- Williamette River Bank

| Total Chromium (mg/L) | Dissolved Chromium (mg/L) | |
|---|---|---|
| <0.00720 | <0.00720 | Sample Baseline (May 2005) |
| <0.00360 | <0.00360 | Sample Phase 1, Round 1 (July 2005) |
| 0.00230J | 0.00102J | Sample Phase 1, Round 2 (August 2005) |
| <0.00750 | 0.00400J | Sample Phase 1, Round 3 (September 2005) |

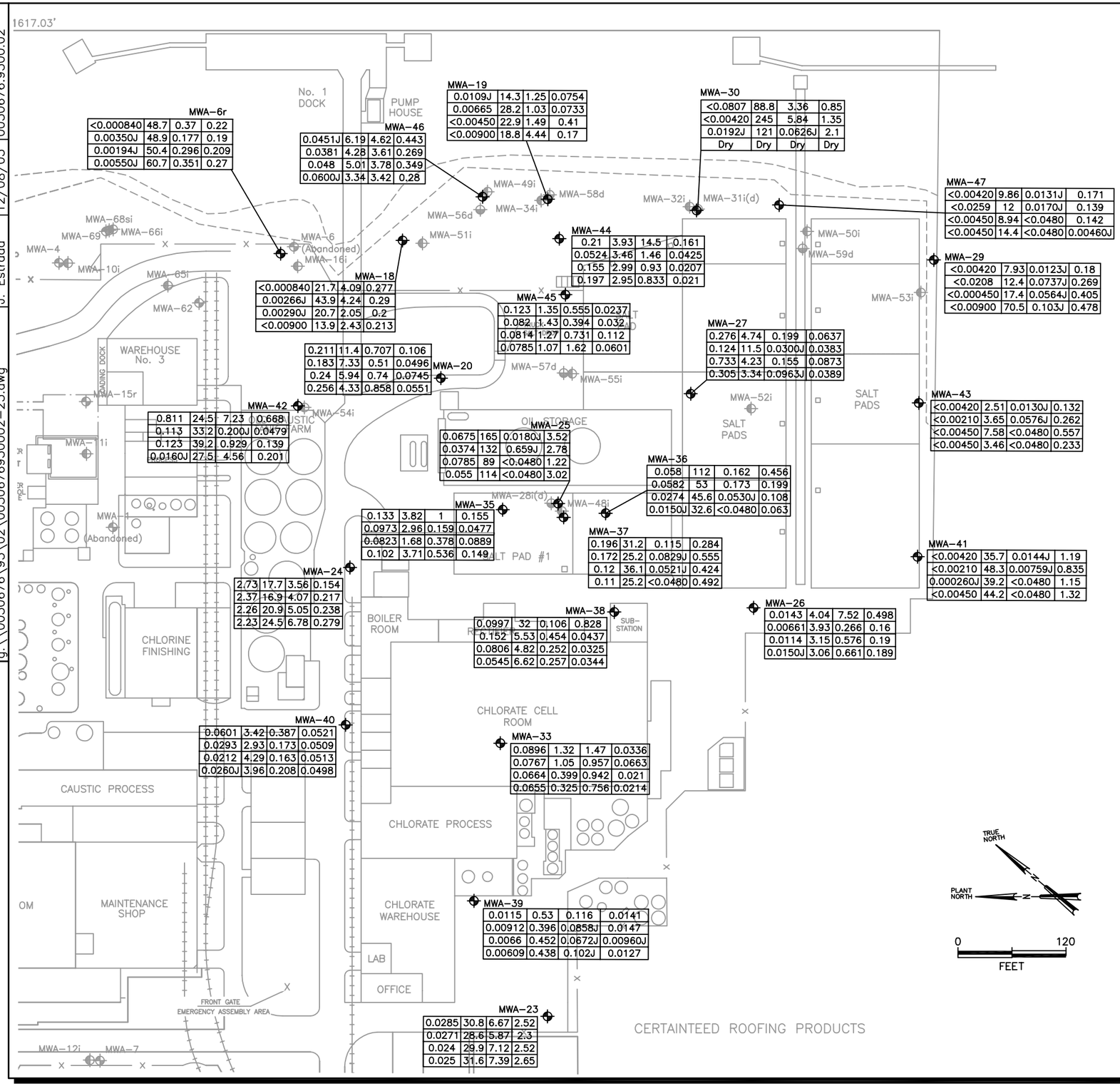
Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.

TRUE NORTH
PLANT NORTH
0 120
FEET

Figure 15
*Deep Zone Total Chromium and Dissolved Chromium Concentrations*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

Project No. 0030676.9300.02
Date: 12/08/05
Drawn By: J. Estrada
CAD File: g:\0030676\93\02\0030676930002-25.dwg




## LEGEND

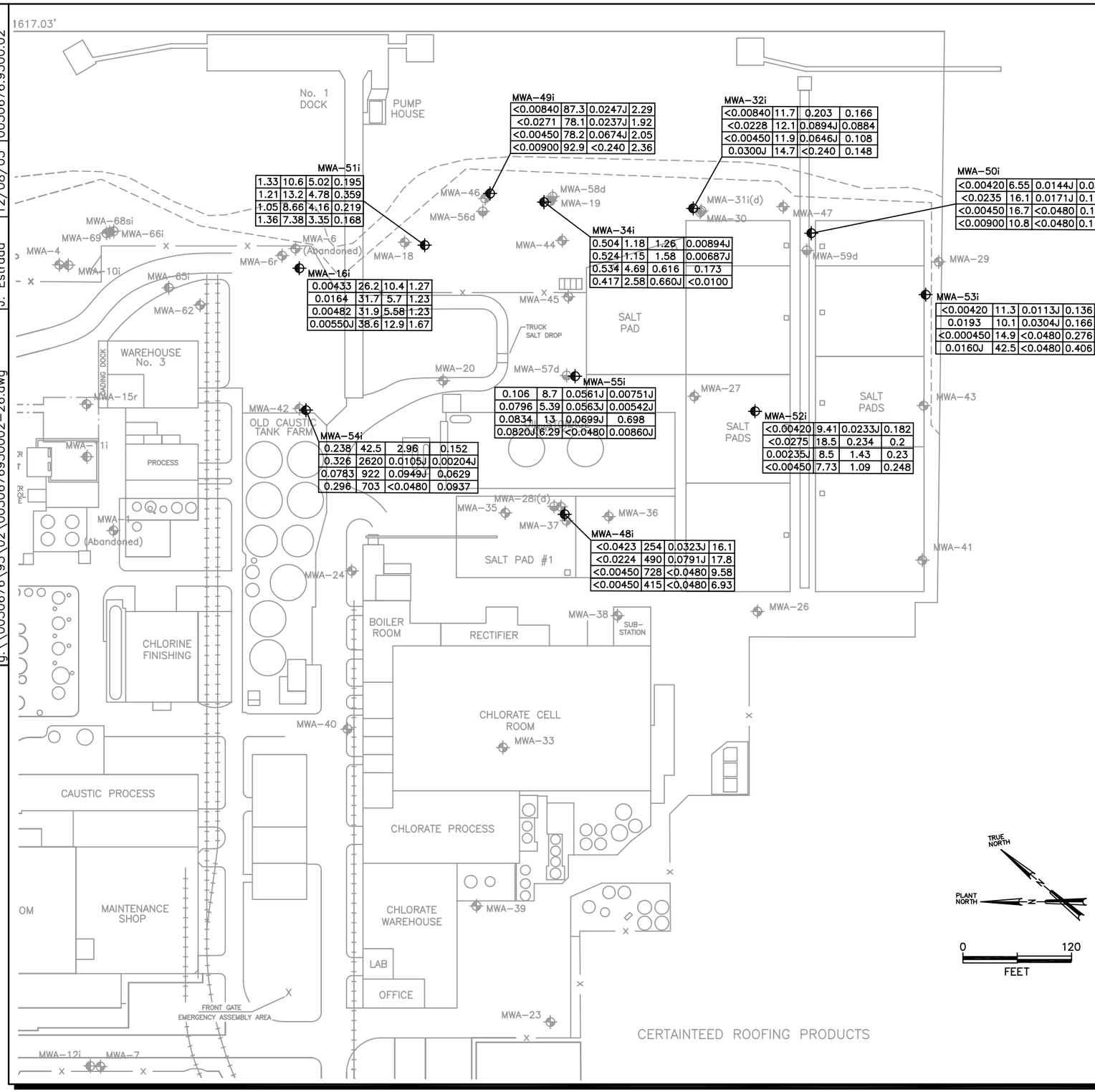
- Monitoring Well, Shallow Zone
- Montoring Well, Intermediate Zone
- Monitoring Well, Deep Zone
- (d) Indicates Intermediate Zone Well Actually Completed in the Deep Zone
- Williamette River Bank

| Dissolved Arsenic (mg/L) | Dissolved Calcium (mg/L) | Dissolved Iron (mg/L) | Dissolved Manganese (mg/L) | |
|---|---|---|---|---|
| 0.0143 | 4.04 | 7.52 | 0.498 | Sample Baseline (May 2005) |
| 0.00661 | 3.93 | 0.266 | 0.16 | Sample Phase 1, Round 1 (July 2005) |
| 0.0114 | 3.15 | 0.576 | 0.19 | Sample Phase 1, Round 2 (August 2005) |
| 0.0150J | 3.06 | 0.661 | 0.189 | Sample Phase 1, Round 3 (September 2005) |

Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.

Figure 16
*Shallow Zone Metals Concentrations*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05




## LEGEND

- Monitoring Well, Shallow Zone
- Montoring Well, Intermediate Zone
- Monitoring Well, Deep Zone
- (d) Indicates Intermediate Zone Well Actually Completed in the Deep Zone
- Williamette River Bank

| Dissolved Arsenic (mg/L) | Dissolved Calcium (mg/L) | Dissolved Iron (mg/L) | Dissolved Manganese (mg/L) | |
|---|---|---|---|---|
| 0.0143 | 4.04 | 7.52 | 0.498 | Sample Baseline (May 2005) |
| 0.00661 | 3.93 | 0.266 | 0.16 | Sample Phase 1, Round 1 (July 2005) |
| 0.0114 | 3.15 | 0.576 | 0.19 | Sample Phase 1, Round 2 (August 2005) |
| 0.0150J | 3.06 | 0.661 | 0.189 | Sample Phase 1, Round 3 (September 2005) |

Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.

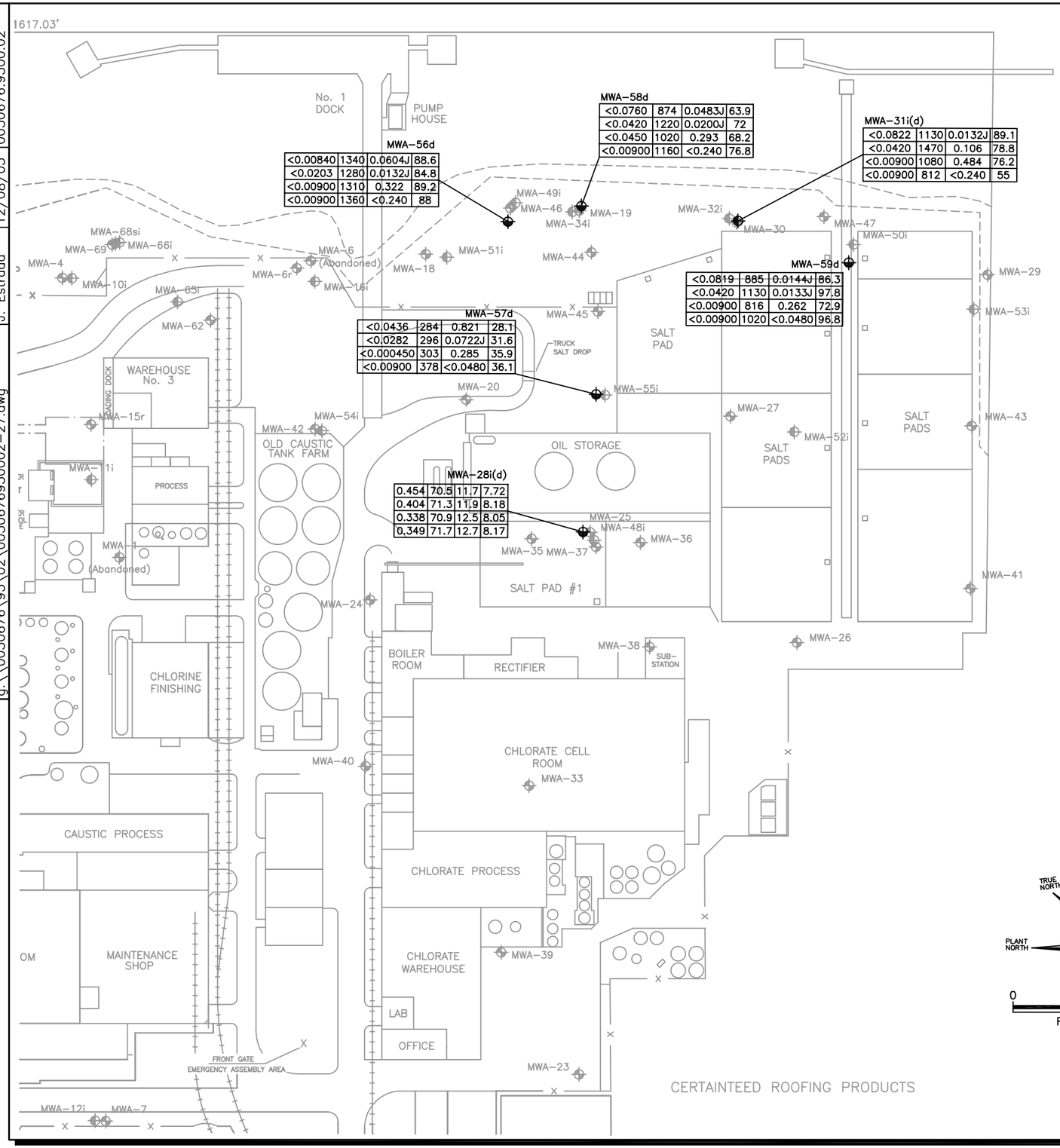
TRUE NORTH
PLANT NORTH
0 120
FEET

Figure 17
*Intermediate Zone Metals Concentrations*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

Project No. 0030676.9300.02
Date: 12/08/05
Drawn By: J. Estrada
CAD File: g:\0030676\93\02\0030676930002-26.dwg

Project No. 0030676.9300.02
Date: 12/08/05
Drawn By: J. Estrada
CAD File: g:\\0030676\93\02\0030676930002-27.dwg




## LEGEND

- Monitoring Well, Shallow Zone
- Montoring Well, Intermediate Zone
- Monitoring Well, Deep Zone
- (d) Indicates Intermediate Zone Well Actually Completed in the Deep Zone
- Williamette River Bank

| Dissolved Arsenic (mg/L) | Dissolved Calcium (mg/L) | Dissolved Iron (mg/L) | Dissolved Manganese (mg/L) | |
|---|---|---|---|---|
| 0.0143 | 4.04 | 7.52 | 0.498 | Sample Baseline (May 2005) |
| 0.00661 | 3.93 | 0.266 | 0.16 | Sample Phase 1, Round 1 (July 2005) |
| 0.0114 | 3.15 | 0.576 | 0.19 | Sample Phase 1, Round 2 (August 2005) |
| 0.0150J | 3.06 | 0.661 | 0.189 | Sample Phase 1, Round 3 (September 2005) |

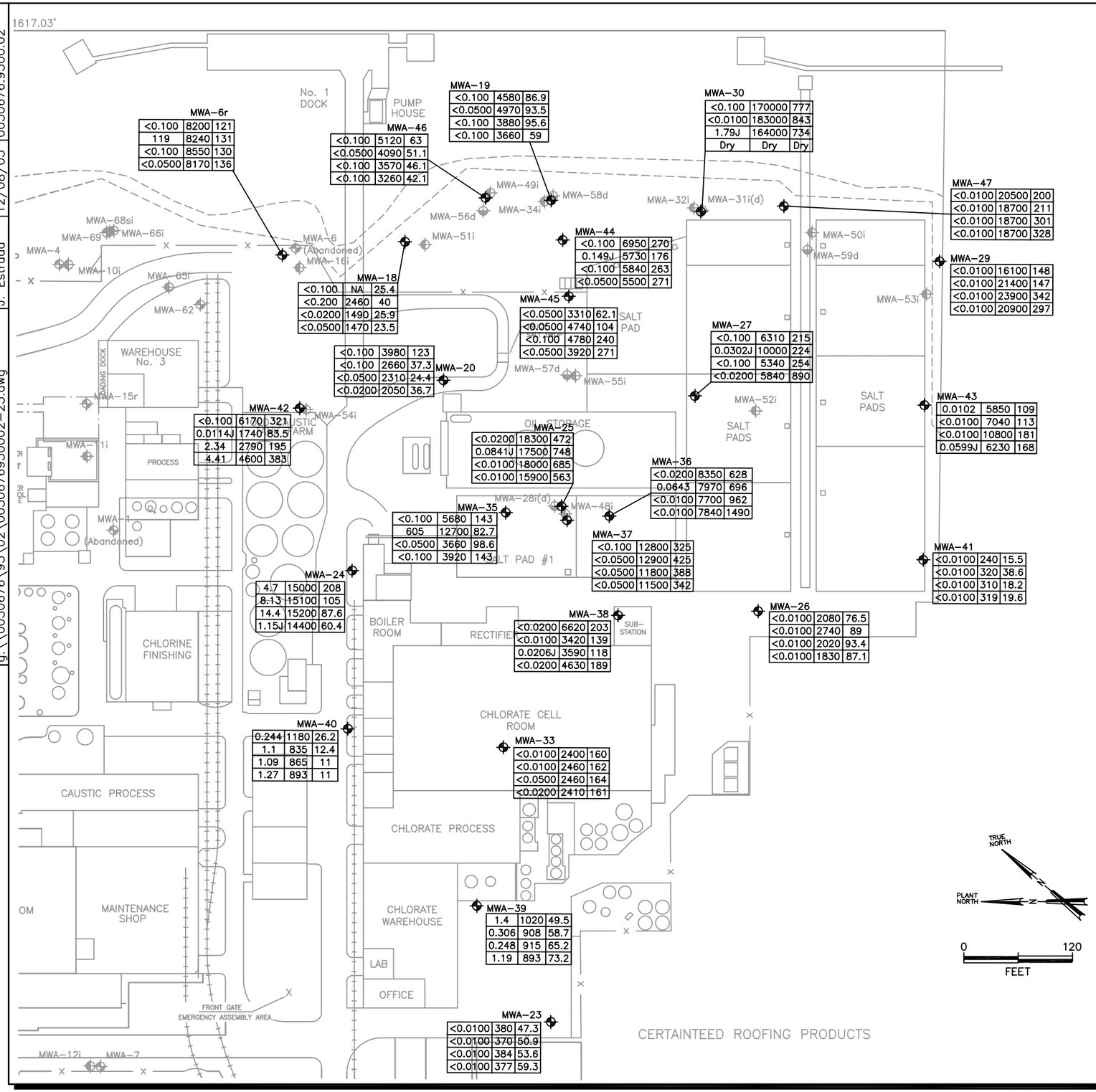
Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.

TRUE NORTH
PLANT NORTH
0 120
FEET

Figure 18
*Deep Zone Metals Concentrations*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

Project No. 0030676.9300.02
Date: 12/08/05
Drawn By: J. Estrada
CAD File: g:\0030676\93\02\0030676930002-25.dwg




## LEGEND

- Monitoring Well, Shallow Zone
- Montoring Well, Intermediate Zone
- Monitoring Well, Deep Zone
- (d) Indicates Intermediate Zone Well Actually Completed in the Deep Zone
- Dry Insufficient Groundwater In Well to Collect a Sample
- Williamette River Bank

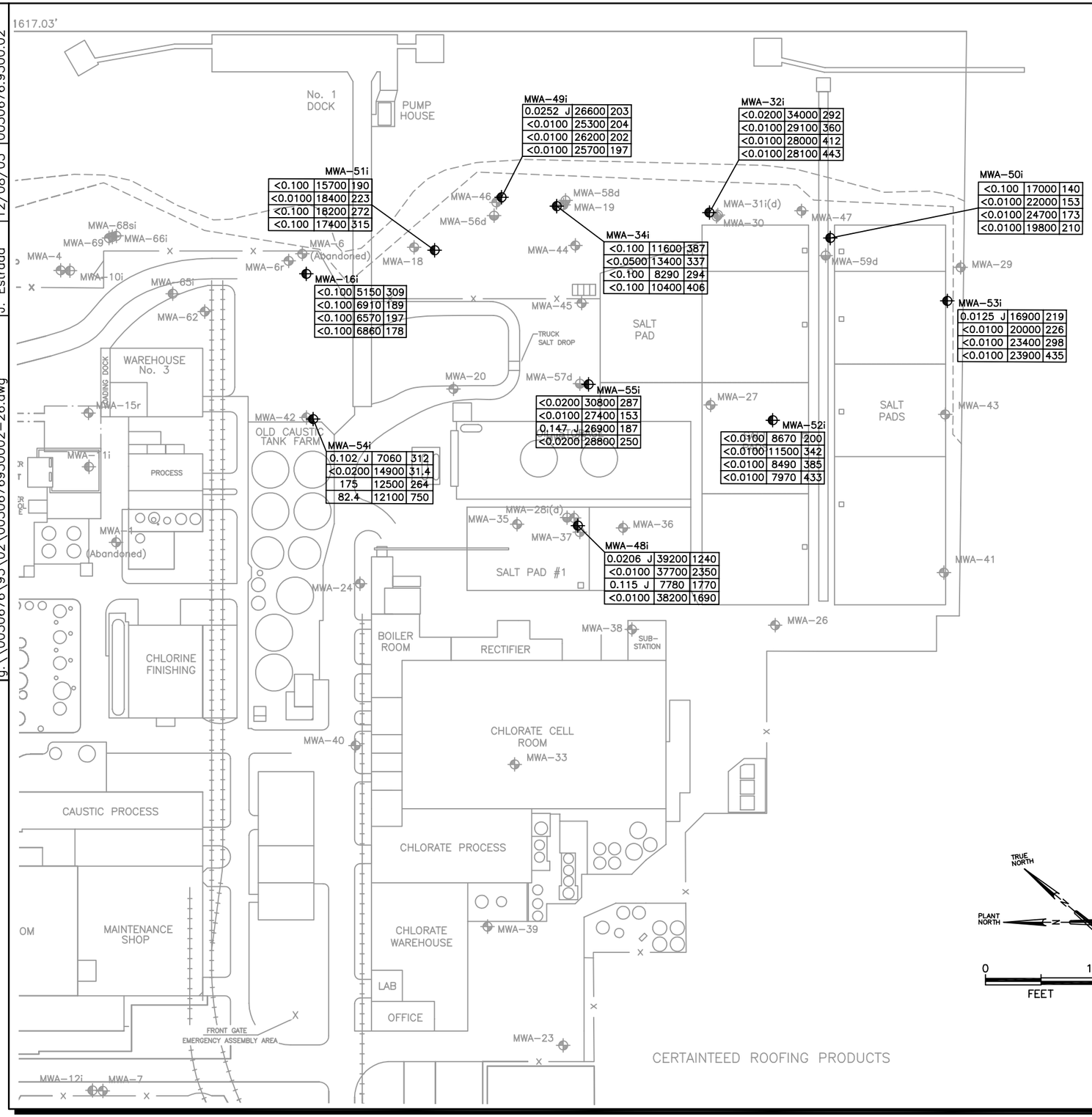
| Sulfide (mg/L) | Total Dissolved Solids (mg/L) | Sulfate (mg/L) | |
|---|---|---|---|
| 0.0102 | 5850 | 109 | Sample Baseline (May 2005) |
| <0.0100 | 7040 | 113 | Sample Phase 1, Round 1 (July 2005) |
| <0.0100 | 10800 | 181 | Sample Phase 1, Round 2 (August 2005) |
| 0.0599J | 6230 | 168 | Sample Phase 1, Round 3 (September 2005) |

Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.

Figure 19
*Shallow Zone Sulfide, Sulfate, and Total Dissolved Solids Concentrations*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

Project No. 0030676.9300.02
Date: 12/08/05
Drawn By: J. Estrada
CAD File: g:\0030676\93\02\0030676930002-26.dwg




## LEGEND

- Monitoring Well, Shallow Zone
- Montoring Well, Intermediate Zone
- Monitoring Well, Deep Zone
- (d) Indicates Intermediate Zone Well Actually Completed in the Deep Zone
- Williamette River Bank

| Sulfide (mg/L) | Total Dissolved Solids (mg/L) | Sulfate (mg/L) | |
|---|---|---|---|
| 0.0102 | 5850 | 109 | Sample Baseline (May 2005) |
| <0.0100 | 7040 | 113 | Sample Phase 1, Round 1 (July 2005) |
| <0.0100 | 10800 | 181 | Sample Phase 1, Round 2 (August 2005) |
| 0.0599J | 6230 | 168 | Sample Phase 1, Round 3 (September 2005) |

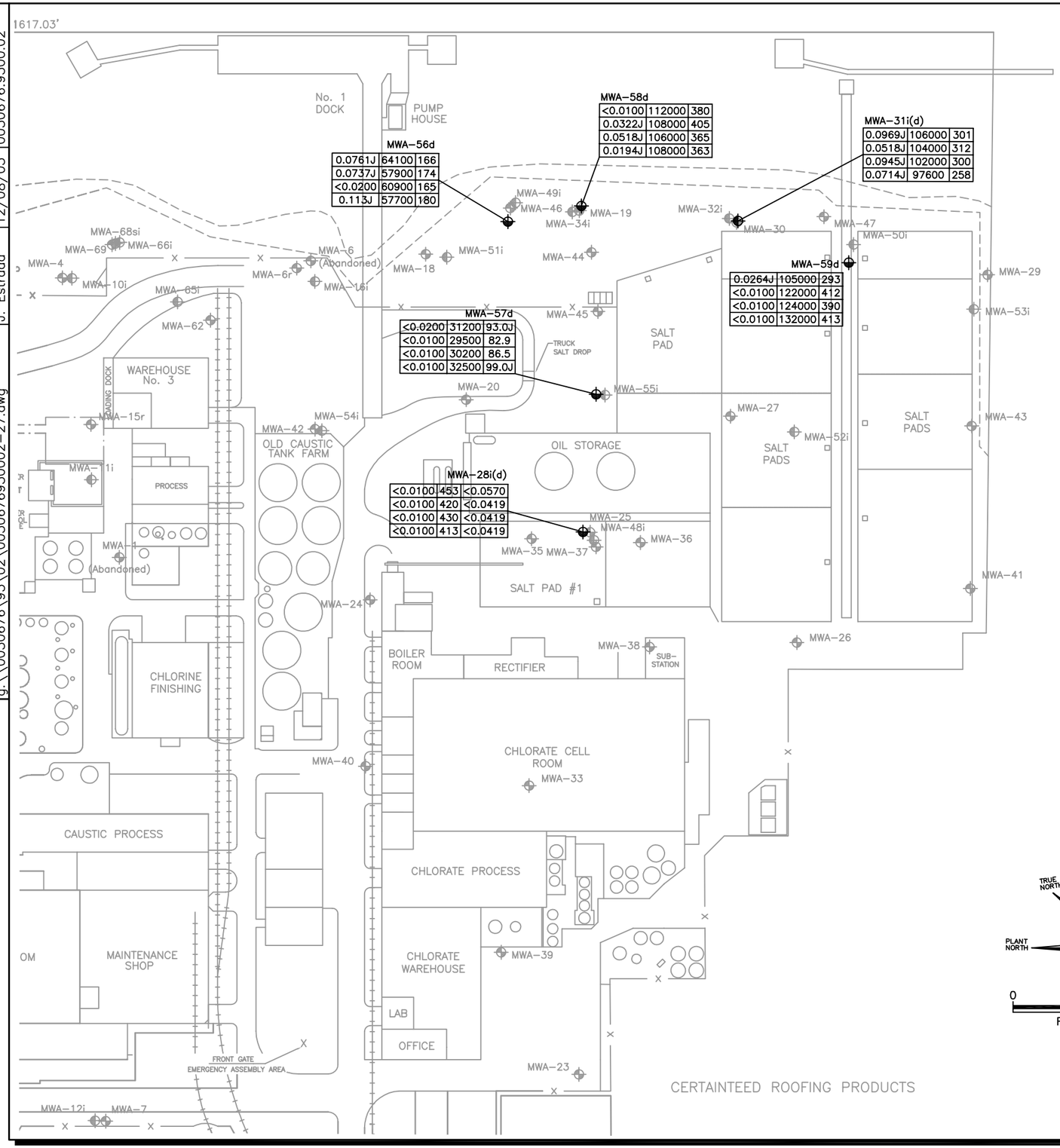
Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.

TRUE NORTH
PLANT NORTH
0 120
FEET

Figure 20
*Intermediate Zone Sulfide, Sulfate, and Total Dissolved Solids Concentrations*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

Project No. 00306769300.02
Date: 12/08/05
Drawn By: J. Estrada
CAD File: g:\\00306769300\02\003067693002-27.dwg




## LEGEND

- Monitoring Well, Shallow Zone
- Montoring Well, Intermediate Zone
- Monitoring Well, Deep Zone
- (d) Indicates Intermediate Zone Well Actually Completed in the Deep Zone
- Williamette River Bank
- ND Not Detected

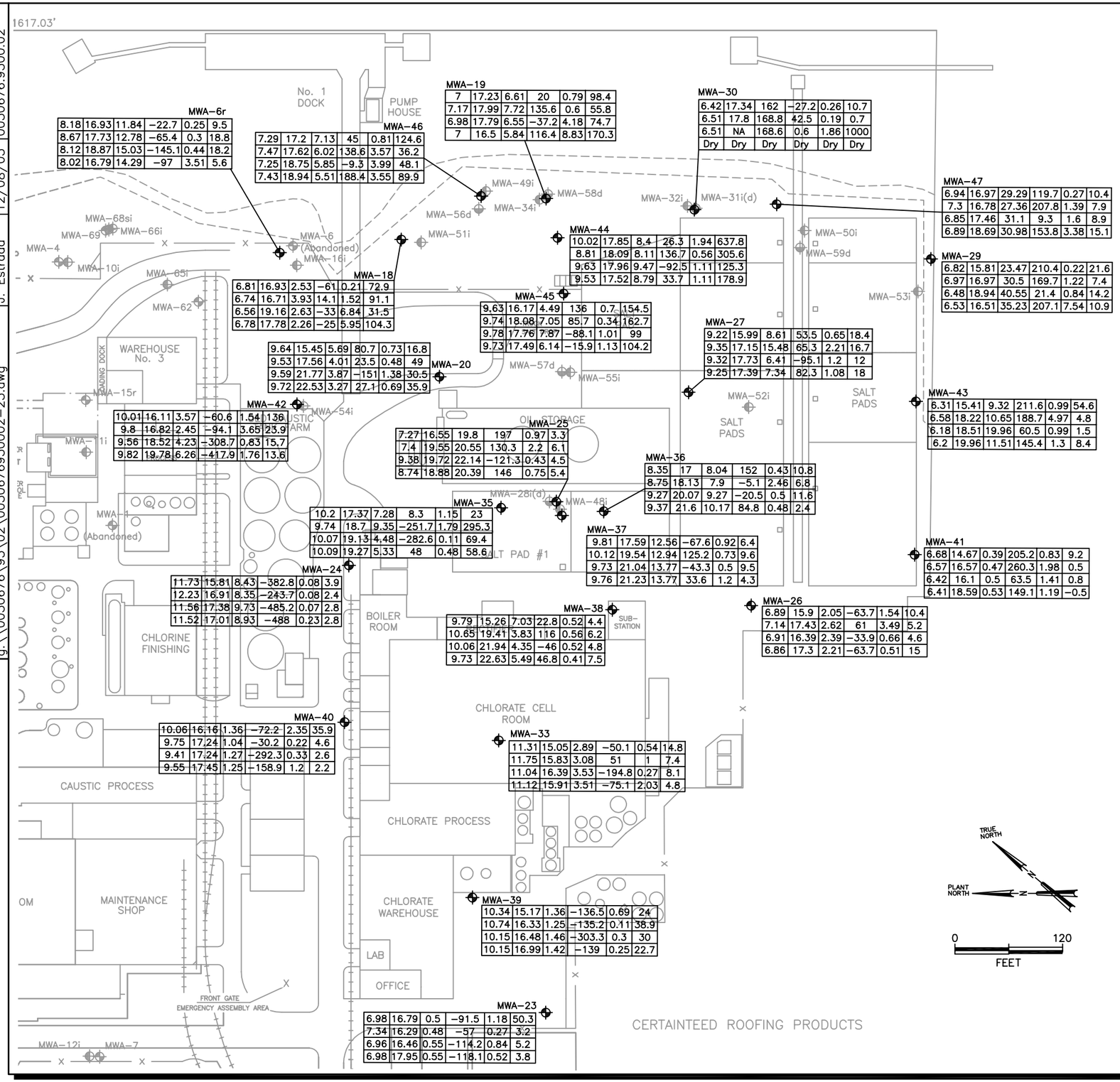
| Sulfide (mg/L) | Total Dissolved Solids (mg/L) | Sulfate (mg/L) | |
|---|---|---|---|
| 0.0102 | 5850 | 109 | Sample Baseline (May 2005) |
| <0.0100 | 7040 | 113 | Sample Phase 1, Round 1 (July 2005) |
| <0.0100 | 10800 | 181 | Sample Phase 1, Round 2 (August 2005) |
| 0.0599J | 6230 | 168 | Sample Phase 1, Round 3 (September 2005) |

Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.

Figure 21
*Deep Zone Sulfide, Sulfate, and Total Dissolved Solids Concentrations*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

Project No. 0030676.9300.02
Date: 12/08/05
Drawn By: J. Estrada
CAD File: g:\0030676\93\02\0030676930002-25.dwg




## LEGEND

- Monitoring Well, Shallow Zone
- Montoring Well, Intermediate Zone
- Monitoring Well, Deep Zone
- (d) Indicates Intermediate Zone Well Actually Completed in the Deep Zone
- Dry Insufficient Groundwater In Well to Collect a Sample
- Williamette River Bank

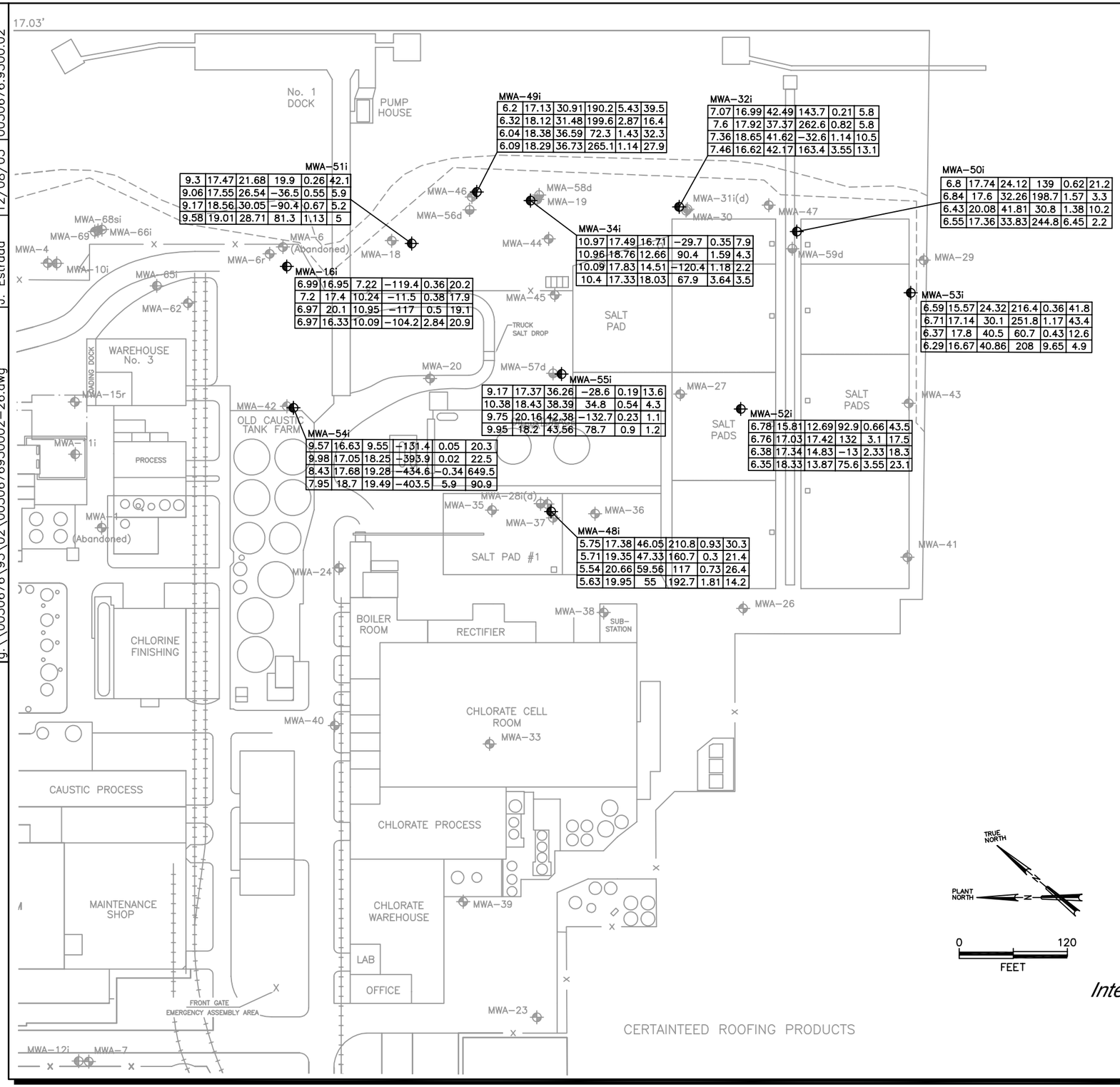
| pH | Temperature °C | Electrical Conductivity (mS/cm) | ORP (mv) | Dissolved Oxygen (mgO2/L) | Turbidity (NTU) | |
|---|---|---|---|---|---|---|
| 6.68 | 14.67 | 0.39 | 205.2 | 0.83 | 9.2 | Sample Baseline (May 2005) |
| 6.57 | 16.57 | 0.47 | 260.3 | 1.98 | 0.5 | Sample Phase 1, Round 1 (July 2005) |
| 6.42 | 16.1 | 0.5 | 63.5 | 1.41 | 0.8 | Sample Phase 1, Round 2 (August 2005) |
| 6.41 | 18.59 | 0.53 | 149.1 | 1.19 | −0.5 | Sample Phase 1, Round 3 (September 2005) |

Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.

Figure 22
*Shallow Zone Groundwater Field Parameter Concentrations*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

Project No. 0030676.9300.02
Date: 12/08/05
Drawn By: J. Estrada
CAD File: g:\0030676\93\02\0030676930002-26.dwg




## LEGEND

- Monitoring Well, Shallow Zone
- Montoring Well, Intermediate Zone
- Monitoring Well, Deep Zone
- (d) Indicates Intermediate Zone Well Actually Completed in the Deep Zone
- Williamette River Bank

| pH | Temperature °C | Electrical Conductivity (mS/cm) | ORP (mv) | Dissolved Oxygen (mgO2/L) | Turbidity (NTU) | |
|---|---|---|---|---|---|---|
| 6.68 | 14.67 | 0.39 | 205.2 | 0.83 | 9.2 | Sample Baseline (May 2005) |
| 6.57 | 16.57 | 0.47 | 260.3 | 1.98 | 0.5 | Sample Phase 1, Round 1 (July 2005) |
| 6.42 | 16.1 | 0.5 | 63.5 | 1.41 | 0.8 | Sample Phase 1, Round 2 (August 2005) |
| 6.41 | 18.59 | 0.53 | 149.1 | 1.19 | −0.5 | Sample Phase 1, Round 3 (September 2005) |

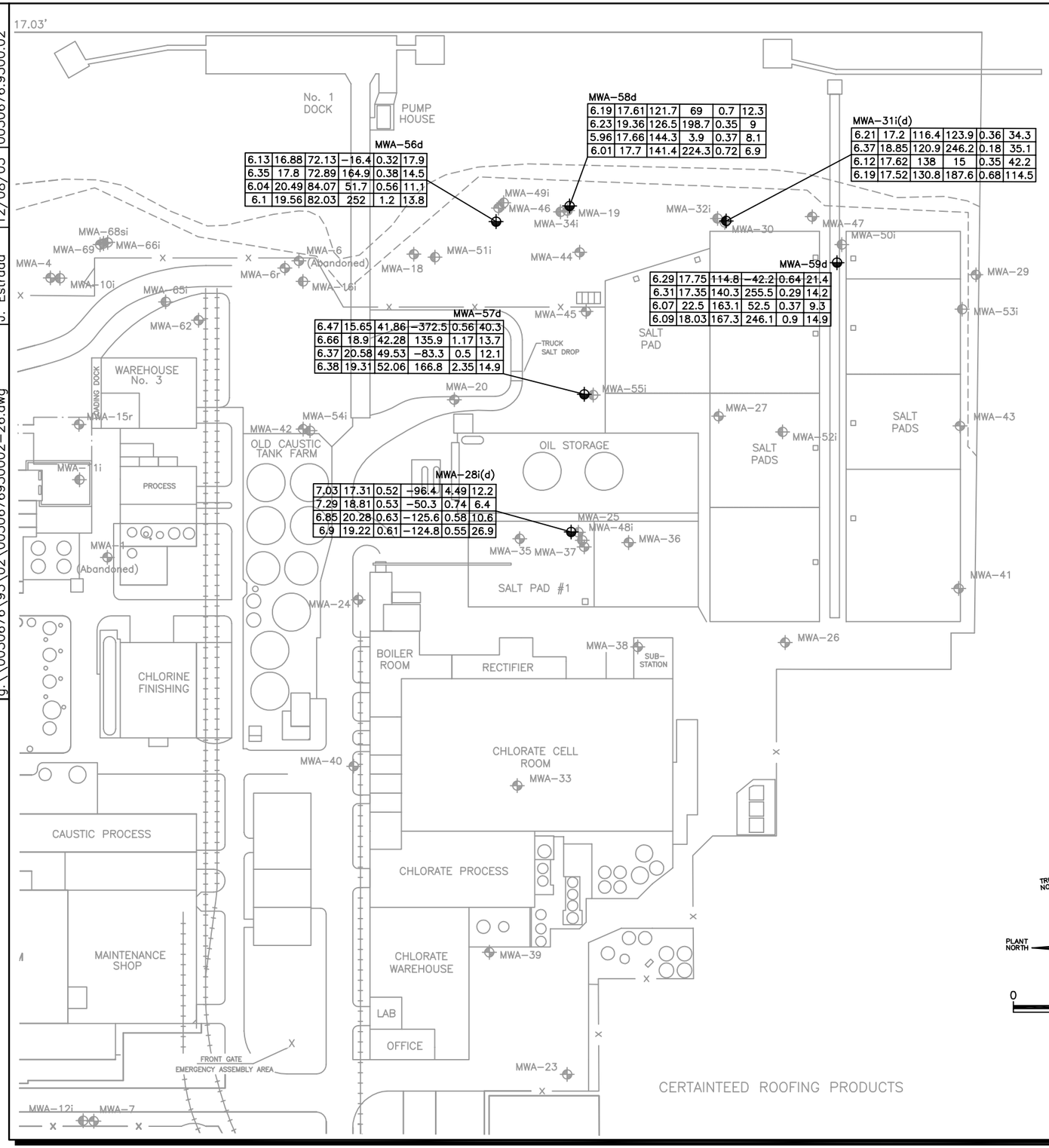
Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.

TRUE NORTH
PLANT NORTH
0 120
FEET

Figure 23
*Intermediate Zone Groundwater Field Parameter Concentrations*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05

Project No. 0030676.9300.02
Date: 12/08/05
Drawn By: J. Estrada
CAD File: g:\0030676\93\02\0030676930002-26.dwg




## LEGEND

- Monitoring Well, Shallow Zone
- Montoring Well, Intermediate Zone
- Monitoring Well, Deep Zone
- (d) Indicates Intermediate Zone Well Actually Completed in the Deep Zone
- Williamette River Bank

| pH | Temperature °C | Electrical Conductivity (mS/cm) | ORP (mv) | Dissolved Oxygen (mgO2/L) | Turbidity (NTU) | |
|---|---|---|---|---|---|---|
| 6.68 | 14.67 | 0.39 | 205.2 | 0.83 | 9.2 | Sample Baseline (May 2005) |
| 6.57 | 16.57 | 0.47 | 260.3 | 1.98 | 0.5 | Sample Phase 1, Round 1 (July 2005) |
| 6.42 | 16.1 | 0.5 | 63.5 | 1.41 | 0.8 | Sample Phase 1, Round 2 (August 2005) |
| 6.41 | 18.59 | 0.53 | 149.1 | 1.19 | −0.5 | Sample Phase 1, Round 3 (September 2005) |

Note:
Most buildings and structures noted on this diagram have been demolished and/or removed.

TRUE NORTH
PLANT NORTH
0 120
FEET

Figure 24
*Deep Zone Groundwater Field Parameter Concentrations*
*Arkema Inc.*
*Portland, Oregon*

ERM 12/05