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July 28, 2000

Mr. William Wertz
New York State Dept. of Environmental. Conservation
Division of Solid Waste Management
50 Wolf Road
Albany, New York 12233

re: Quarterly Report: Olin Chemicals
Buffalo Ave. Facility, Niagara Falls, NY

Dear Mr. Wertz:

This is the eleventh Quarterly report, as required by Olin's Administrative Order on Consent (AOC) for our Niagara Falls Plant, (Index #R9-4171-94-08, Site Registry #9-32-051A, and B). The timeframe for this report covers the period from April 1, 2000 through June 30, 2000

Operation / Maintenance issues :
Details of the implementation of routine maintenance tasks and trouble shooting activities are included in the monthly memoranda from Olin's consultant, Law Engineering and Environmental Services, included as **Attachment 1**. While the monthly O&M reports document details of all issues, the most significant O&M issues are described below:

- Mechanical well cleanings were conducted in April for all recovery wells. Immediately following the cleanings the wells pumped at the highest rates to date.
- Transducer relocation: The final three transducers were relocated to the in-casing piezometers in wells RW-1,4 and 5.
- Transducer calibrations continue to be done on a monthly schedule.
- Target drawdown levels were achieved in some recovery wells but not all. Details are documented in the monthly O&M memoranda. However, the hydraulic capture was maintained, as evidenced by piezometric data and plots.

- System interruption episodes:
  - On April 7, 2000 the Plant 2 remediation system was taken down for sewer cleaning. Mike Bellotti notified Bill Wertz via email on that same day. System was re-started within 6 hours. Documentation of notification is included in **Attachment 2.**
  - On June 27 the Plant 2 remediation system was taken down to investigate elevated air odors in the treatment building. The system air inflow settings to the air stripper were adjusted to alleviate the odors. The system was re-started within three hours. Documentation of notification is included in **Attachment 2.**
  - On April 18, the Production well in the Plant 1 area was taken off line for maintenance for approximately half a day.
  - On June 11, 12, 14 and 16 the Production well in the Plant 1 area was taken off line for maintenance for approximately six to eight hours per day.
- DNAPL checks: Trace of DNAPL has been documented in RW 5 for each monthly check. No DNAPL was detected in any other recovery well. DNAPL volume ranging from 20 to 40 ml was removed from monitoring well OBA10, on the east side of Gill Creek near the former Solvent Chemical sewer outfall. Documentation is included in the monthly O&M memoranda in **Attachment 1**.

Hydraulic capture:

Attachment 3 includes piezometric maps for each hydraulic zone for April, May and June, 2000. Data on piezometric levels are included electronically on the diskette in **Attachment 4.**

- The piezometric plots indicate that we continue to achieve capture in the A-zone. This is measured by monitoring the cones of depression around each of the five recovery wells, by comparison of the elevation of Gill Creek relative to A-zone groundwater levels west of Gill Creek, and by observation of a dry zone between the northern recovery wells (RW-1 and 2) and Buffalo Avenue.
- B-zone capture is consistently being achieved at Plant 2. Data from the new piezometers indicate a gradient toward the recovery wells (RW1 and 2) from a stagnation point just south of Buffalo Avenue. B-zone capture is being achieved along Gill Creek, as evidenced by the piezometric contours. The Gill Creek stage measurements have added to the certainty of this conclusion, as it is generally greater than B-zone wells west of Gill Creek.
- C and CD zone groundwater flow and capture was consistent with prior measurements, for April and May, with flow being predominantly westward toward the Olin production well. June contours deflect to the north, indicative of Production well down time for maintenance during the monthly monitoring episode.

Groundwater sampling and analysis:

- The data for the first semiannual 2000 sampling event were collected during June. Results are pending.
- Quarterly groundwater quality data were taken at the headers for each Plant 2 recovery well. Data and evaluation are presented in subsequent sections of this report.

Extracted groundwater volume and contaminant mass:

- The volume of pumped groundwater for the second quarter of 2000 was approximately 6.6 million gallons. The total volume of groundwater extracted and treated since system startup is approximately 41 million gallons.
- **Attachment 5** contains data and tables to support calculations of mass removed during the second quarter 2000 and for the entire project duration. Included are recovery well flow data, recovery well header contaminant concentrations, estimated mass removed for the second quarter of 2000 by parameter group and a table of groundwater flow and mass removed since start-up.
- A summary table of extracted groundwater and contaminant mass is presented below:

Summary: Contaminant Mass and Groundwater Extracted

Since system start-up: December - 1997

Quarter	organics lb	mercury lb	pesticides lb	g.w. extracted gal
Startup/Q1-98 [est]	27.81	0.02	0.2	210,000
Q2-98	154.5	0.1	1.3	1,175,799
Q3-98	595.5	0.6	4.9	2,583,159
Q4-98	1273.1	0.1	5.2	4,054,996
Q1-99	817.3	0.05	8.5	4,233,521
Q2-99	1034.7	0.05	7.1	3,991,584
Q3-99	1188.2	0.1	8.7	5,219,207
Q4-99	976.3	0.02	6.9	6,366,935
Q1-00	1422.9	0.06	6.2	6,757,602
Q2-00	1514.9	0.06	10.3	6,663,345
TOTAL	**9005**	**1.2**	**59**	**41,256,148**

We believe that we have made significant progress since system startup. We will continue to improve the system and monitor its effectiveness. Please direct any questions or comments to me at 423/336-4587.

Sincerely,

Michael J. Bellotti

Michael J. Bellotti

OLIN CORPORATION

List of Attachments

Attachment 1:
Monthly Operation and Maintenance Status Reports: 2Q-900

Attachment 2
Email: M.J. Bellotti to W. Wertz re: notification of system down episodes

Attachment 3:
Piezometric maps: second quarter, 2000

Attachment 4:
Data diskette:

- Piezometric data: second quarter: 2000,
- recovery well header data: second quarter: 2000

Attachment 5: Contaminant mass removed tables:

- Estimated contaminant mass removed: second quarter, 2000
- Groundwater flow and mass removed since project start-up
- Recovery well header contaminant concentrations

cc:
Stanley Radon - NYSDEC Buffalo, NY
Kelly McIntosh: Geomatrix, Buffalo, NY
Vickie Ray: Olin Charleston
James Murphy: Olin Niagara Falls, NY
Dale Carpenter: USEPA: Region II, New York, NY
Rick Marotte: Law Engineering: Kennesaw, GA
Monica L. Fries Esq.- Husch & Eppenberger: St. Louis, MO

Bellotti, Mike CHAS

From: Bellotti, Mike CHAS
Sent: Tuesday, June 27, 2000 3:48 PM
To: 'NYSDEC Wertz, Bill'
Subject: Olin Niagara Falls

Bill:
This is to notify you that we shut down the pumping wells this afternoon for system troubleshooting. We are checking efficiency of air flow through the stripper. I'll keep you apprised of re-startup.

Mike

Bldg. 73 Ground Water Air Stripper
High VOC Investigation

1. **June 27th - 12:00pm – Strong smell reported coming out of STM-28 (7S sewer manhole).**
2. **Checked manhole with VOC monitor – reading @ 17.0 ppm.**
3. **Proceeded to investigate source of VOC.**
4. **Checked manholes stm-14, stm-15, and stm-45 – all readings of 12 ppm or higher.**
5. **Proceeded to check air stripper for VOC leaks. Found discharge of intake air fan emitting approx. 17-21 ppm VOC's.**
6. **Contacted Karl Rasch, Area Manager.**
7. **Contacted Mike Belloti, Olin ERG.**
8. **Notified Rick Hall & Jim Murphy.**
9. **Shut down GW pumping wells to investigate source of VOCs.**

Actions taken:

a. **Drained approx. (5) gallons of sludge from the air stripper discharge line.**
b. **Started up air stripper and GW pumps to investigate problem.**
c. **Don Greer, Greg Atkinson, and myself opened the fresh-air intake to the air stripper to 100% from 50%.**
d. **Closed off the clarifier & pH treatment tanks vacuum draw to approx. 15-20% open from 100% open.**
e. **Opened fan discharge to 100% open from 70% open.**

Upon completion: June 27, 2000 - 5:45pm

a. **Took VOC air sampling of intake fan discharge – found VOC reading had dropped to less than 3 ppm.**
b. **7S discharge manhole (stm-45) - VOC reading had dropped to approx. 1.2 ppm. Stm-14 & 15 – 0 ppm.**
c. **Took sample of air stripper discharge effluent. To be analyzed.**
d. **Odor in bldg. was negligible.**

Conclusion:

By increasing the fresh airflow and disharge of the blower, and reducing the amount of high VOC air being drawn from the top of the tanks, the odor and VOC readings dissipated immensely. A balance was maintained to operate the air stripper @ maximum, while drawing fumes off the tank to reduce fumes from emitting into the bldg.

We need to determine answers to the following questions:

1. **Why the intakes were restricted – during cold weather flow is restricted as to not overload capacity of the heater in the duct work?**
2. **Were damper settings set for year round operation?**
3. **The increased pumping or loading of contaminants require an increase in air flow to the air stripper to remove contaminants?**

Bellotti, Mike CHAS

From: Brayley, Ben H NIAG
Sent: Monday, April 10, 2000 2:30 PM
To: Bellotti, Mike CHAS
Subject: Bldg. 73 Groundwater system

Mike,
The groundwater system was down from 9:45am to 3:30pm on Friday April 7th, due to sewer cleaning. One blockage was found in between manhole # 24 and Stm #28.
Ben

Bellotti, Mike CHAS

From: Bellotti, Mike CHAS
Sent: Friday, April 07, 2000 7:49 AM
To: 'NYSDEC Wertz, Bill'
Cc: Bellotti, Mike
Subject: system down for maintenance

Bill:
This is to let you know that our Niagara Falls plant site remediation system will be down briefly today for sewer maintenance. We will have to shut down the system to keep the sewer temporarily free of water until sediment cleaning is done. We will be down for several hours.

Mike

LAW

LAWGIBB Group Member

MEMORANDUM

To: Mike Bellotti @ Olin-Charleston; Don Greer, Karl Rasch, Ben Brayley, and Armand Damesimo @ Olin-Niagara; John Martin, and Rick Marotte @ LAW.

From: Anna Moomaw

Date: May 4, 2000

Subject: Monthly O&M Status Update for Ground-Water Collection and Treatment System for April 2000

In continuing efforts to keep everyone informed, this memo addresses the status of the O&M issues for the ground-water collection and treatment system. This memo follows from the monthly status update memo issued 4/18/2000.

System Status

The following table presents general treatment system data obtained from OMNX and during field monitoring for the month of April.

Ground-Water Collection and Treatment System Status					
	RW-1	RW-2	RW-3	RW-4	RW-5
Pumping Systems (Data from 4/1/00-4/30/00)					
Average Flow Rate (gpm)	2.3	2.8	13.8	14.9	14.0
End of Month Flow Rate (gpm)	5.5	6.4	15.6	16.7	11.2
Maximum achievable flow rate of pump (to date) (gpm)	*5.5*	*6.6*	*21.8*	*24.1*	*22.6*
Newly Developed Target Drawdown Level (ft above MSL) at PZ	**559**	**556**	**558.3**	**558.1**	**557.5**
Avg GW Elev. (OMNX) (ft above MSL)	558.5	558.3	566.4	556.1	552.6
End of Period GW Elev. (OMNX) (ft above MSL)	556.8	558.4	565.9	555.9	555.7
New OMNX Low-High Level Set Points for Auto. Pump Off-On (ft above MSL)	*551.8 - 558*	*551.2 – 555*	*550.6 – 557.3*	*546.5 – 557.1*	*548.7 – 556.5*
Comments	None	None	None	None	None

Ground-Water Collection and Treatment System Status					
Well Screen Losses (The well screen loss is defined as the difference between the well piezometer outside the casing and the water level inside the casing)					
	RW-1	RW-2	RW-3	RW-4	RW-5
April 25, 2000 Data					
Target Drawdown Level (ft above MSL) at PZ	**559**	**556**	**558.3**	**558.1**	**557.5**
GW Elevation at Piezometer (ft above MSL)	562.5	559.5	556.1	556.5	560.5
GW Elevation at RW (ft above MSL)	557.1	560.7	557.8	557.0	559.7
Difference (ft)	5.39	-1.2	-1.7	-0.5	0.8
Comments	None	None	None	None	None
Notes: Data collected after well cleaning. RW-1 and RW-2 had been off-line prior to data collection date due for maintenance (pipe clean-out).					

Mechanical Well Cleanings

Mechanical well cleanings were conducted for all five recovery wells the week of April 10, 2000. Following the well cleanings, pipe fouling problems were encountered at RW-1 and RW-2. Obstructions detected after the cleaning are thought to have been caused by old scale that had fallen off the wall of the conduit pipe. It is also possible that some of the plugging was caused by incomplete removal of in-well debris. In response to this issue, our well cleaning protocol has been amended to include a thorough flushing of debris by the drillers after each cleaning. Future conduit scaling will be minimized by an additional acid flushing step with hydrochloric acid. Prior to pumping from RW-1 or RW-2 to the treatment plant after well cleaning, water will be recirculated though the well while acid is added, until the pH of the recirculated water is approximately 7.5 to 8. The plant will monitor the pH as an indicator of when to add (or reduce) continuous acid feed rates to the wells, with an operating pH of 7.5 to 8 being optimal.

Total Flow, Pumping Rates, and Down Time

After RW-1 and RW-2 were placed back in service, increased pumping rates were achieved at these wells. As indicated in the table above, these wells are pumping at or near the highest pump rates recorded to date. The flow rate at RW-4 has improved by several gpm since the well was cleaned. RW-3 and RW-5 are also operating at acceptable flow rates. Based on the transducer data, the RW-5 pump appears to have cycled several times during the month of April, though based on the cycling rate, wear on the pump is not a concern at this time.

Transducers

The RW-1, RW-4, and RW-5 transducers were re-located during the April well cleaning event. Wells were cleaned the week of April 10, 1999. When the transducers were to be re-located, piping was discovered in the RW-5 piezometer, which had been dropped in this well during a previous DNAPL check. This piping was removed from the piezometer prior to the April water level data collection event on April 25, 2000.

In the month of April, RW-4 target drawdown was achieved every day. For RW-2 and RW-3, the target drawdown was not achieved. For RW-1, the target drawdown was not achieved for 13 days due to the maintenance activities at this well. At RW-5, the target drawdown was not achieved for

five days following a pump cycling occurrence. This delayed response time indicates that the high level setpoint for this pump should be lowered. The setpoint will be changed from 556.5 ft to 555.5 ft when the transducers are re-calibrated for the month of May.

Transducer Calibrations

Transducer calibrations are checked monthly. CRA records manual water level data and OMNX transducer output data during monthly water level data collection activities. The difference between the manual level data and the OMNX reading is then used to readjust the zero setting of the transducer through OMNX so that the two readings "match".

Calibrations were not initiated through OMNX last month, as new protocols were being established for system access and configuration rights. The new protocol for Law's access to the OMNX system will be as follows: The plant will require prior notification so they can activate the modem at designated time(s) at which Law will need access to the system. At these times, Law will be able to access the system with "read-only" rights. Law will have access to history files to download data logs. Any re-calibration changes or new logger files required by Law will be initiated by the plant (Rick MacDonell or Karl Rasch).

For the month of May, the transducers will be re-calibrated through OMNX as follows:

Transducer Calibration (Water Level Data from: April 25, 2000)							
	Well Elevation	OMNX Elevation	Difference	OMNX Zero	Adjusted Zero	Difference, Last Calibr.	Notes
Well ID	*(Man)*	*(OMNX)*	*(Diff = Man – OMNX)*	*(Zero)*	*(Zero + Diff)*	*(Feb 7, 2000)*	
RW-1-PZ	562.5	557.2	5.3	550.64	555.94	0.21	
RW-2-PZ	559.47	558.81	0.66	550.08	550.74	0.38	
RW-3-PZ	556.09	556.18	-0.09	549.5	549.41	NA	
RW-4-PZ	556.5	556.41	0.09	543.68	543.77	-3.08	
RW-5-PZ	560.54	559.97	0.57	547.80	548.37	1.27	

The transducers will be re-calibrated monthly and after each well cleaning event.

DNAPL Checks

In April, the following observations were noted during DNAPL (dense non-aqueous phase liquid) checks:

Well	**Volume Purged**	**DNAPL Presence**	**Quantity Recovered**	**Comments**
RW-1	1 gallon	No	NA	None
RW-2	1 gallon	No	NA	None
RW-3	1 gallon	No	NA	None
RW-4	1 gallon	No	NA	None
RW-5	1 gallon	Yes	Trace	None

Attachments: ***Monthly Flow and Groundwater Level Data Excel spreadsheet***

LAW

LAWGIBB Group Member

MEMORANDUM

To: Mike Bellotti @ Olin-Charleston; Don Greer, Karl Rasch, Ben Brayley, and Armand Damesimo @ Olin-Niagara; John Martin, and Rick Marotte @ LAW.

From: Anna Moomaw

Date: June 19, 2000

Subject: Monthly O&M Status Update for Ground-Water Collection and Treatment System for May 2000

In continuing efforts to keep everyone informed, this memo addresses the status of the O&M issues for the ground-water collection and treatment system. This memo follows from the monthly status update memo issued 5/4/2000.

System Status

The following table presents general treatment system data obtained from OMNX and during field monitoring for the month of May.

Ground-Water Collection and Treatment System Status					
	RW-1	RW-2	RW-3	RW-4	RW-5
Pumping Systems (Data from 5/1/00-5/31/00)					
Average Flow Rate (gpm)	4.8	6.9	14.4	14.2	12.6
End of Month Flow Rate (gpm)	1.9	7.8	16.2	14.1	12.9
Maximum achievable flow rate of pump (to date) (gpm)	*6.2 (previous 5.5)*	*8.2 (previous 6.6)*	*21.8*	*24.1*	*22.6*
Newly Developed Target Drawdown Level (ft above MSL) at PZ	**559**	**556**	**558.3**	**558.1**	**557.5**
Avg GW Elev. (OMNX) (ft above MSL)	558.9	559.0	561.2	556.1	550.3
End of Period GW Elev. (OMNX) (ft above MSL)	564.5	559.3	560.5	556.4	550.0
OMNX Low-High Level Set Points for Auto. Pump Off-On (ft above MSL)	*551.8 - 558*	*551.2 – 555*	*550.6 – 557.3*	*546.5 – 557.1*	*548.7 – 555.5*
Comments	None	None	None	None	None

Ground-Water Collection and Treatment System Status					
Well Screen Losses (The well screen loss is defined as the difference between the well piezometer outside the casing and the water level inside the casing)					
	RW-1	RW-2	RW-3	RW-4	RW-5
May 8, 2000 Data					
Target Drawdown Level (ft above MSL) at PZ	**559**	**556**	**558.3**	**558.1**	**557.5**
GW Elevation at Piezometer (ft above MSL)	556.5	557.8	556.0	558.1	549.0
GW Elevation at RW (ft above MSL)	556.5	557.9	558.0	558.0	548.8
Difference (ft)	0	-0.1	-2.0	0.1	0.2
Comments	None	None	None	None	None
Notes:					

Total Flow, Pumping Rates, and Down Time

Increased pumping rates were achieved at RW-1 and RW-2 in May, with the highest flow rates recorded to date occurring near the end of the month. RW-3, RW-4, and RW-5 are operating at acceptable flow rates. Based on the transducer data, the RW-5 pump appears to have cycled several times during the month of May, though based on the cycling rate, wear on the pump is not a concern at this time.

Due to ongoing maintenance issues associated with RW-1, the plant will be procuring the equipment necessary to switch the acid feed system at RW-1 from drums to totes.

Transducers

In the month of May, target drawdown was achieved every day at RW-4 and RW-5. For RW-2, the target drawdown was not achieved. For RW-1 and RW-3, the target drawdown was not achieved for 19 days and 14 days, respectively.

Transducer Calibrations

Transducer calibrations are checked monthly. CRA records manual water level data and OMNX transducer output data during monthly water level data collection activities. The difference between the manual level data and the OMNX reading is then used to readjust the zero setting of the transducer through OMNX so that the two readings "match".

Calibrations for May were completed in OMNX on May 12, 2000. The high level setpoint for RW-5 was changed from 556.5 ft to 555.5 ft when the transducers were re-calibrated for the month of May to better maintain drawdown below the target level.

For the month of June, the transducers will be re-calibrated through OMNX as follows:

Transducer Calibration (Water Level Data from: May 8, 2000)							
	Well Elevation	OMNX Elevation	Difference	OMNX Zero	Adjusted Zero	OMNX Zero, Last Calibr.	Notes
Well ID	*(Man)*	*(OMNX)*	*(Diff = Man – OMNX)*	*(Zero) (May 8, 2000)*	*(Zero + Diff)*	*(May 12, 2000)*	
RW-1-PZ	556.5	556.3	0.2	550.6	550.9	555.9	
RW-2-PZ	557.8	558.1	-0.3	550.1	549.8	550.7	
RW-3-PZ	556.0	565.6	-9.6	549.5	NA	549.4	Faulty signal – no calibration change
RW-4-PZ	558.1	555.5	2.6	543.7	546.2	543.8	
RW-5-PZ	549.0	549.4	-0.4	547.8	547.4	548.4	

The transducers will be re-calibrated monthly and after each well cleaning event.

DNAPL Checks

In May, the following observations were noted during DNAPL (dense non-aqueous phase liquid) checks:

Well	Volume Purged	DNAPL Presence	Quantity Recovered	Comments
RW-1	1 gallon	No	NA	None
RW-2	1 gallon	No	NA	None
RW-3	1 gallon	No	NA	None
RW-4	1 gallon	No	NA	None
RW-5	1 gallon	Yes	Trace	None
OBA-10A	1 gallon	Yes	Approx. 40 mL	None

Attachments: ***Monthly Flow and Groundwater Level Data Excel spreadsheet***

LAW

LAWGIBB Group Member

MEMORANDUM

To: Mike Bellotti @ Olin-Charleston; Don Greer, Karl Rasch, and Ben Brayley @ Olin-Niagara; John Martin, Taura Nichols, and Rick Marotte @ LAW.

From: Anna Moomaw

Date: July 11, 2000

Subject: Monthly O&M Status Update for Ground-Water Collection and Treatment System for June 2000

In continuing efforts to keep everyone informed, this memo addresses the status of the O&M issues for the ground-water collection and treatment system. This memo follows from the monthly status update memo issued 6/19/2000.

System Status

The following table presents general treatment system data obtained from OMNX and during field monitoring for the month of June.

Ground-Water Collection and Treatment System Status					
	RW-1	RW-2	RW-3	RW-4	RW-5
Pumping Systems (Data from 6/1/00-6/30/00)					
Average Flow Rate (gpm)	2.8	8.6	15.9	13.7	10.8
End of Month Flow Rate (gpm)	2.7	9.0	14.8	13.2	13.0
Maximum achievable flow rate of pump (to date) (gpm)	*6.2*	*9.4 (previous 8.2)*	*21.8*	*24.1*	*22.6*
Newly Developed Target Drawdown Level (ft above MSL) at PZ	**559**	**556**	**558.3**	**558.1**	**557.5**
Avg GW Elev. (OMNX) (ft above MSL)	557.1	559.2	560.7	557.4	550.1
End of Period GW Elev. (OMNX) (ft above MSL)	552.3	558.3	560.5	558.8	549.4
OMNX Low-High Level Set Points for Auto. Pump Off-On (ft above MSL)	*551.8 – 558*	*551.2 – 555*	*550.6 – 557.3*	*546.5 – 557.1*	*548.7 – 555.5*
Comments	None	None	None	None	None

Ground-Water Collection and Treatment System Status					
Well Screen Losses (The well screen loss is defined as the difference between the well piezometer outside the casing and the water level inside the casing)					
	RW-1	RW-2	RW-3	RW-4	RW-5
June 15, 2000 Data					
Target Drawdown Level (ft above MSL) at PZ	**559**	**556**	**558.3**	**558.1**	**557.5**
GW Elevation at Piezometer (ft above MSL)	555.1	559.6	561.0	560.9	549.8
GW Elevation at RW (ft above MSL)	547.8	559.4	560.9	560.5	547.3
Difference (ft)	7.3	0.2	0.1	-0.4	2.5
Comments	Acid addition to recovery well needed	None	None	None	None
Notes:					

Total Flow, Pumping Rates, and Down Time

Increased pumping rates were achieved at RW-2 in June, with the highest flow rates recorded to date occurring from the middle to end of the month. RW-1, RW-3, RW-4, and RW-5 are operating at acceptable flow rates. Overall flow rates from the entire system continue to exceed six million gallons per month, representing an increase in flow of about 50% over the first quarter of 1999.

The plant is in the process of procuring the equipment necessary to switch the acid feed system at RW-1 from drums to totes, to facilitate maintenance and to minimize chemical handling..

Transducers

In the month of June, target drawdown was achieved every day at RW-5. The target drawdown was not achieved at RW-1, RW-2, RW-3, and RW-4 for 13 days, 30 days, 30 days, and 11 days, respectively. However, given the high flow rates, and evidence of capture in piezometric plots, this non-achievement of target drawdown levels does not indicate loss of hydraulic control.

The transducer at RW-1 appears to be reading much higher than the manual water level. Therefore, the piezometer should be checked for indications of blockage and hydrochloric acid should the added to the piezometer to clean it if needed. The recovery well should also be acid cleaned as indicated in the table above.

Transducer Calibrations

Transducer calibrations are checked monthly. CRA records manual water level data and OMNX transducer output data during monthly water level data collection activities. The difference between the manual level data and the OMNX reading is then used to readjust the zero setting of the transducer through OMNX so that the two readings "match".

Calibrations from data collected in May were completed in OMNX on June 20, 2000. For the month of June, the transducers will be re-calibrated through OMNX as follows:

Transducer Calibration (Water Level Data from: June 15, 2000)							
	Well Elevation	OMNX Elevation	Difference	OMNX Zero	Adjusted Zero	OMNX Zero, Last Calibr.	Notes
Well ID	*(Man)*	*(OMNX)*	*(Diff = Man – OMNX)*	*(Zero) (as of May 12, 2000)*	*(Zero + Diff)*	*(June 20, 2000)*	
RW-1-PZ	547.8	560.4	-12.6	550.6	NA	550.9	Faulty signal – no calibration change
RW-2-PZ	559.4	560.6	-1.2	550.1	548.9	549.8	
RW-3-PZ	560.9	562.8	-1.9	549.5	547.6	549.4	
RW-4-PZ	560.9	558.2	2.7	543.7	546.4	546.2	
RW-5-PZ	547.3	550.2	-2.9	547.8	544.9	547.4	

The transducers will be re-calibrated monthly and after each well cleaning event.

DNAPL Checks

In June, the following observations were noted during DNAPL (dense non-aqueous phase liquid) checks:

Well	Volume Purged	DNAPL Presence	Quantity Recovered	Comments
RW-1	1 gallon	No	NA	None
RW-2	1 gallon	No	NA	None
RW-3	1 gallon	No	NA	None
RW-4	1 gallon	No	NA	None
RW-5	1 gallon	Yes	Trace	None
OBA-10A	1 gallon	Yes	Approx. 20 mL	None

Air Stripper Influent/Effluent Sampling

Data from the latest round of air stripper sampling (sampled on May 18, 2000) was received in June 2000. This data is attached. Removal efficiencies are slightly less than in the previous sampling event. Influent concentrations have generally decreased since the September 1999 sampling event.

Other issues

On June 27, odors were detected at the 7S sewer manhole and air stripper blower intake. The air intake dampers and air discharge damper were adjusted such that these odors were abated. The

treatment system was down for approximately 24 hours while these adjustments and checks were implemented.

Attachments: ***Monthly Flow and Groundwater Level Data Excel spreadsheet***
Air Stripper Influent/Effluent Data Excel spreadsheet

Print Date: 7/11/00

Olin - Niagara Falls
OMNX Systems Check
Summary of Total Flow, Average System Flow Rates, and Average Ground-Water Elevations

Period	Total Flow (gal/month)	Total Quarterly Flow (gal)	Average Flow Rate (gpm)						Flow Contribution Per Well (gal/month)					Notes
			RW-1	RW-2	RW-3	RW-4	RW-5	Total	RW-1	RW-2	RW-3	RW-4	RW-5	
Dec-97	60,000		0.1	0.0	0.4	0.4	0.4	1.3	4,720	810	19,098	18,902	16,471	1,3
4th Qtr 97		**60,000**												
Jan-98	60,000		0.1	0.0	0.4	0.4	0.4	1.3	4,720	810	19,098	18,902	16,471	1,3
Feb-98	45,000		0.1	0.0	0.4	0.4	0.3	1.1	3,540	607	14,323	14,176	12,353	1,3
Mar-98	45,000		0.1	0.0	0.3	0.3	0.3	1.0	3,540	607	14,323	14,176	12,353	1,3
1st Qtr 98		**150,000**												
Apr-98	365,297		0.7	0.1	2.7	2.7	2.3	8.5	28,735	4,931	116,271	115,080	100,280	1,3
May-98	334,862		0.6	0.1	2.4	2.4	2.1	7.5	26,341	4,520	106,584	105,492	91,925	2,3
Jun-98	475,640		0.9	0.1	3.5	3.5	3.0	11.0	37,415	6,421	151,393	149,841	130,570	2,3
2nd Qtr 98		**1,175,799**												
Jul-98	921,665		1.6	0.3	6.6	6.5	5.7	20.6	72,501	12,441	293,359	290,353	253,011	2,3
Aug-98	526,034		0.1	0.6	3.7	3.8	3.4	11.6	5,554	26,894	169,255	172,032	152,300	2, 4
Sep-98	1,135,460		2.4	2.5	7.0	7.1	7.1	26.0	104,479	107,966	306,316	309,076	307,623	2, 4
3rd Qtr 98		**2,583,159**												
Oct-98	1,252,945		0.4	1.1	6.8	10.1	9.7	28.1	18,288	48,816	302,400	451,872	431,568	2, 4
Nov-98	1,408,950		2.2	0.7	5.0	14.4	10.5	32.8	94,806	31,590	213,858	618,408	450,288	2, 4
Dec-98	1,393,101		0.3	1.0	4.5	15.4	9.8	31.1	15,641.8	44,071.7	203,120.8	691,082.4	439,184.7	2, 4
4th Qtr 98		**4,054,996**												
Jan-99	1,295,192		0.0	0.4	3.6	17.2	7.8	29.0	859.8	18,177.9	162,180.7	767,147.9	346,825.6	2, 4
Feb-99	1,362,751		2.9	3.1	4.2	18.0	5.6	33.8	117,795.4	123,769.5	171,018.8	725,570.9	224,596.3	2, 4
Mar-99	1,575,578		3.0	5.1	4.1	18.7	4.4	35.3	134,877.1	229,744.9	181,540.4	833,891.5	195,523.8	2, 4
1st Qtr 99		**4,233,521**												
Apr-99	1,419,313		2.8	5.5	3.0	18.2	3.3	32.8	123,041.5	237,749.5	129,802.5	785,958.0	142,761.4	2, 4
May-99	1,394,656		2.6	4.8	2.3	17.8	3.7	31.2	116,709.4	213,374.1	102,339.5	796,659.0	165,574.1	2, 4
Jun-99	1,177,615		2.6	1.6	2.0	17.3	3.6	27.3	112,802.9	70,595.5	87,762.0	748,817.5	157,636.7	2, 4
2nd Qtr 99		**3,991,584**												
Jul-99	1,195,224		1.2	2.8	3.1	14.9	4.8	26.8	53,137.4	122,974.6	140,304.6	663,995.8	214,811.9	2, 4
Aug-99	1,847,659		0.0	5.0	6.2	20.3	9.8	41.4	863.3	222,431.1	278,726.9	908,309.3	437,328.0	2, 4
Sep-99	2,176,325		1.4	3.6	7.3	20.2	17.8	50.4	59,269.9	157,635.4	316,791.2	872,351.8	770,276.2	2, 4
3rd Qtr 99		**5,219,207**												
Oct-99	2,349,293		0.0	0.9	11.5	19.4	20.9	52.7	876.2	41,247.8	511,135.1	863,843.0	932,191.2	2, 4
Nov-99	1,934,640		0.0	1.4	5.0	17.0	21.3	44.8	852.5	60,535.0	217,494.8	736,290.0	919,468.1	2, 4
Dec-99	2,083,001		0.0	0.5	9.2	17.4	19.7	46.7	843.7	20,114.4	408,615.2	774,595.6	878,832.2	2, 4
4th Qtr 99		**6,366,935**												
Jan-00	2,298,113		0.9	0.1	18.6	16.2	18.7	54.4	38,961.1	2,695.6	697,268.5	722,200.7	836,987.2	2, 4

Olin - Niagara Falls
OMNX Systems Check
Summary of Total Flow, Average System Flow Rates, and Average Ground-Water Elevations

Period	Total Flow (gal/month)	Total Quarterly Flow (gal)	Average Flow Rate (gpm)						Flow Contribution Per Well (gal/month)					Notes
			RW-1	RW-2	RW-3	RW-4	RW-5	Total	RW-1	RW-2	RW-3	RW-4	RW-5	
Feb-00	2,128,415		1.8	1.9	16.2	14.0	17.0	51.0	76,885.5	80,883.3	675,164.4	585,207.5	710,273.9	2, 4
Mar-00	2,331,075		2.9	3.0	14.6	13.8	17.9	52.2	131,194.2	132,973.4	653,688.0	613,820.4	799,398.6	2, 4
1st Qtr 00		**6,757,602**												
Apr-00	2,065,254		2.3	2.8	13.8	14.9	14.0	47.7	98,833.3	119,558.3	595,585.4	644,293.9	606,983.5	2, 4
May-00	2,357,894		4.8	6.9	14.4	14.2	12.6	52.8	216,493.4	305,882.2	642,860.0	632,329.0	560,328.9	2, 4
Jun-00	2,240,197		2.8	8.6	15.9	13.7	10.8	51.9	120,246.6	372,639.1	686,431.1	593,490.4	467,389.9	2, 4
2nd Qtr 00		**6,663,345**												
Average	**1,330,843**		**1.3**	**2.1**	**6.4**	**12.0**	**8.7**	**30.5**	**58,865**	**91,080**	**277,036**	**523,812**	**380,051**	
Total	**41,256,148**								**1,824,823**	**2,823,467**	**8,588,106**	**16,238,165**	**11,781,585**	

1. Estimated total flow
2. Monthly flow totalizer data
3. Average % for totalized flow for Dec-97 through Jul-98.
4. % flow calculated from monthly totalizer data

- Data not available.

Olin - Niagara Falls
Groundwater Remediation System
Air Stripper Efficiency Verification

Print Date: 7/12/00

Parameter	Nov-99	Mar-00			May-00			Design/Model		
FLOW RATE (gpm)	49.2	53.1			50.3			180		
	Effluent (ug/l)	Influent (ug/l)	Effluent (ug/l)	% removal	Influent (ug/l)	Effluent (ug/l)	% removal	Influent (ug/l)	Effluent (ug/l)	% removal
Trichloroethene	170	10000	74	99.26	10000	130	98.70	25650	3	99.99
Tetrachloroethene	80	6800	30	99.56	6200	52	99.16	10707	0.6	99.99
1,1,2,2-Tetrachloroethane	560	1300	280	78.46	1400	740	47.14	6864	3241	52.79
cis-1,2-Dichloroethene	61	1500	24	98.40	1600	38	97.63	4254	5	99.89
1,2,4-Trichlorobenzene	34	460	18	96.09	750	53	92.93	1213	19	98.43
Chloroform	NA	NA	NA		NA	NA		3450	4	99.87
1,3-Dichlorobenzene	ND (10)	ND (330)	ND (5)		<500	6.2		245	0.8	99.69
1,4-Dichlorobenzene	ND (10)	ND (330)	ND (5)		<500	6.4		415	3	99.36
1,2-Dichlorobenzene	ND (10)	ND (330)	ND (5)		<500	<5		568	13	97.67
Vinyl Chloride	ND (20)	ND (670)	ND (10)		<1000	<10		399	0.0	100.00
Chlorobenzene	ND (10)	ND (330)	ND (5)		<500	<5		2179	5	99.78
1,1,2-Trichloroethane	ND (10)	ND (330)	ND (5)		<500	<5		75	6	92.27
Benzene	ND (10)	ND (330)	ND (5)		<500	<5		805	0.3	99.97
Methylene Chloride	ND (10)	ND (330)	ND (5)		<500	8.0		719	7	99.05
2-Butanone (MEK)	NA	NA	NA		NA	NA		1848	1786	3.36
Total VOCs	905	20060	426	97.88	19950	1034	94.82	59391	5092	91.43
1,2,3-Trichlorobenzene	NA	NA	NA		NA	NA				
Hexachlorobutadiene	NA	NA	NA		NA	NA				
trans-1,2-Dichloroethene	ND (10)	ND (330)	ND (5)		<500	<5				
1,1,1-Trichloroethane	ND (10)	ND (330)	ND (5)		<500	<5				
1,1-Dichloroethene	ND (10)	ND (330)	ND (5)		<500	<5				
Carbon Tetrachloride	ND (10)	ND (330)	ND (5)		<500	<5				
1,1,1,2-Tetrachloroethane	NA	NA	NA		NA	NA				

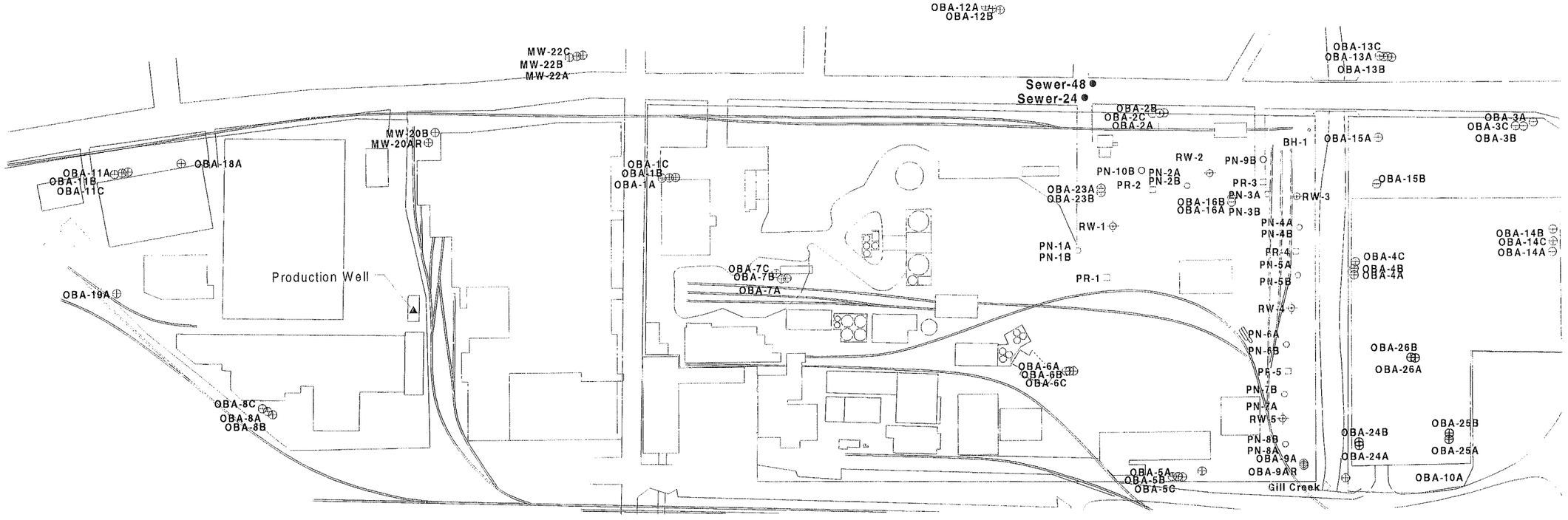
ND : Parameter was not de
NA : Constituent was not ir
J : Estimated result
D: Duplicate analysis perfo
Dec. 97 data - no defoame
* : Influent concentrations a

Olin - Niagara Falls
Groundwater Remediation System
Air Stripper Efficiency Verification

Print Date: 7/12/00

Parameter	Dec-97			Jan-98 *		Apr-99			Jun-99			Sep-99		
FLOW RATE (gpm)	55			55		33			27			54.1		
	Influent (ug/l)	Effluent (ug/l)	% removal	Effluent (ug/l)	% removal*	Influent (ug/l)	Effluent (ug/l)	% removal	Influent (ug/l)	Effluent (ug/l)	% removal	Influent (ug/l)	Effluent (ug/l)	% removal
Trichloroethene	5520	78.5	98.58	135	97.55	8800	110	98.75	8800	110	98.75	14000	120	99.14
Tetrachloroethene	2360	27.4	98.84	49.4	97.91	5300	52	99.02	5800	51	99.12	9800	52	99.47
1,1,2,2-Tetrachloroethane	1630	126	92.27	229	85.95	1500	140	90.67	1200	62	94.83	1700	290	82.94
cis-1,2-Dichloroethene	1070	22.8	97.87	46	95.70	1800	45	97.50	1400	32	97.71	2400	37	98.46
1,2,4-Trichlorobenzene	975	28	97.13	NA		ND (330)	19		ND (1000)	20		820	48	94.15
Chloroform	700	14.3	97.96	28.9	95.87	ND (330)	ND (1)		NA	NA		NA	NA	
1,3-Dichlorobenzene	104	ND (5)		NA		ND (330)	2.9		ND (1000)	ND (5)		ND (400)	ND (20)	
1,4-Dichlorobenzene	86.6	ND (5)		NA		ND (330)	2.9		ND (1000)	ND (5)		ND (400)	ND (20)	
1,2-Dichlorobenzene	85.6	ND (5)		NA		ND (330)	1.6		ND (1000)	ND (5)		ND (400)	ND (20)	
Vinyl Chloride	82.1	ND (10)		ND (10)		ND (670)	ND (1)		ND (2000)	ND (10)		ND (800)	ND (40)	
Chlorobenzene	27.4	ND (5)		ND (5)		ND (330)	ND (1)		ND (1000)	ND (5)		ND (400)	ND (20)	
1,1,2-Trichloroethane	24.2	ND (5)		ND (5)		ND (330)	1.3		ND (1000)	ND (5)		ND (400)	ND (20)	
Benzene	20.9	ND (5)		ND (5)		ND (330)	ND (1)		ND (1000)	ND (5)		ND (400)	ND (20)	
Methylene Chloride	17	ND (5)		5.65	66.76	ND (330)	1.6		1100	5.5	99.50	560	ND (20)	>96.43
2-Butanone (MEK)	NA	NA		ND(100)		NA	NA		NA	NA		NA	NA	
Total VOCs	12703	297	97.66	494	96.11	17400	376	97.84	18300	281	98.47	29280	547	98.13
1,2,3-Trichlorobenzene	331	10.3	96.89	NA	NA	NA	NA		NA	NA		NA	NA	
Hexachlorobutadiene	32.9	ND (5)		NA		NA	NA		NA	NA		NA	NA	
trans-1,2-Dichloroethene	28.7	ND (5)		NA		ND (330)	ND (1)		ND (1000)	ND (5)		ND (400)	ND (20)	
1,1,1-Trichloroethane	11.9	ND (5)		ND (5)		ND (330)	ND (1)		ND (1000)	ND (5)		ND (400)	ND (20)	
1,1-Dichloroethene	9.99	ND (5)		ND (5)		ND (330)	ND (1)		ND (1000)	ND (5)		ND (400)	ND (20)	
Carbon Tetrachloride	9.53	ND (5)		ND (5)		ND (330)	ND (1)		ND (1000)	ND (5)		ND (400)	ND (20)	
1,1,1,2-Tetrachloroethane	5.98	ND (5)		NA		NA	NA		NA	NA		NA	NA	

ND : Parameter was not detected above the laboratory detection limit (shown in parentheses)
NA : Constituent was not included in the list of constituents for the analytical method used
J : Estimated result
D: Duplicate analysis performed. Result listed is highest value reported.
Dec. 97 data - no defoamer addition. Modeling assumed no defoamer addition.
* : Influent concentrations assumed to be equal to those from December 9, 1997 sampling event.



LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS
- □ PASSIVE RELIFF WELLS
- ● SEWER INVERT ELEVATION
- ——— PROPERTY LINE

0 200 400

Scale 1 inch = 200 feet

OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

LAW
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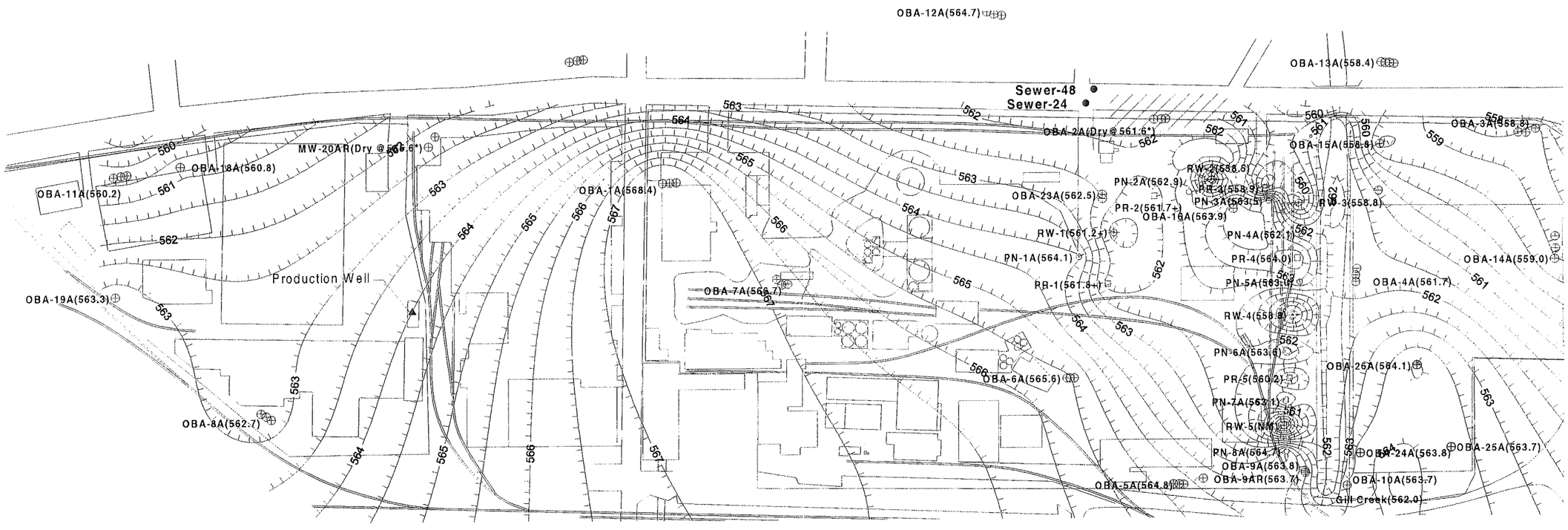
BASE MAP

Job No.: 12000-8-0030

Figure 0



LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT
- PROPERTY LINE
- 565 ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 0.5 FEET)
- ESTIMATED DRY AREA IN ZONE A

Well	Average Flow Rate(gpm)*
RW-1	2.4
RW-2	2.7
RW-3	14.2
RW-4	14.2
RW-5	16.3

*: Averaged using daily flow rates since previous monthly field measurements.

0 200 400

Scale 1 inch = 200 feet

NOTE

*: Well dry, elevation of bottom of A-Zone used in contouring.
+: Bottom of A-Zone elevation used in contouring.
▲: Water Elevation not obtained from Olin Production Well.
●: Buffalo Avenue Sewer invert is assumed to be a groundwater sink. The piezometric surface is estimated as the bottom of the A-zone. The bottom of the A-zone along Buffalo Avenue was estimated from borings OBA-1A, OBA-2A, OBA-3A, and OBA-11A.

Data were obtained in Gill Creek at 12:06 pm (562.0 feet) and 16:04 pm (562.1 feet).
The Gill Creek elevation (562.0 feet) was used in contouring in A zone.

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1999.

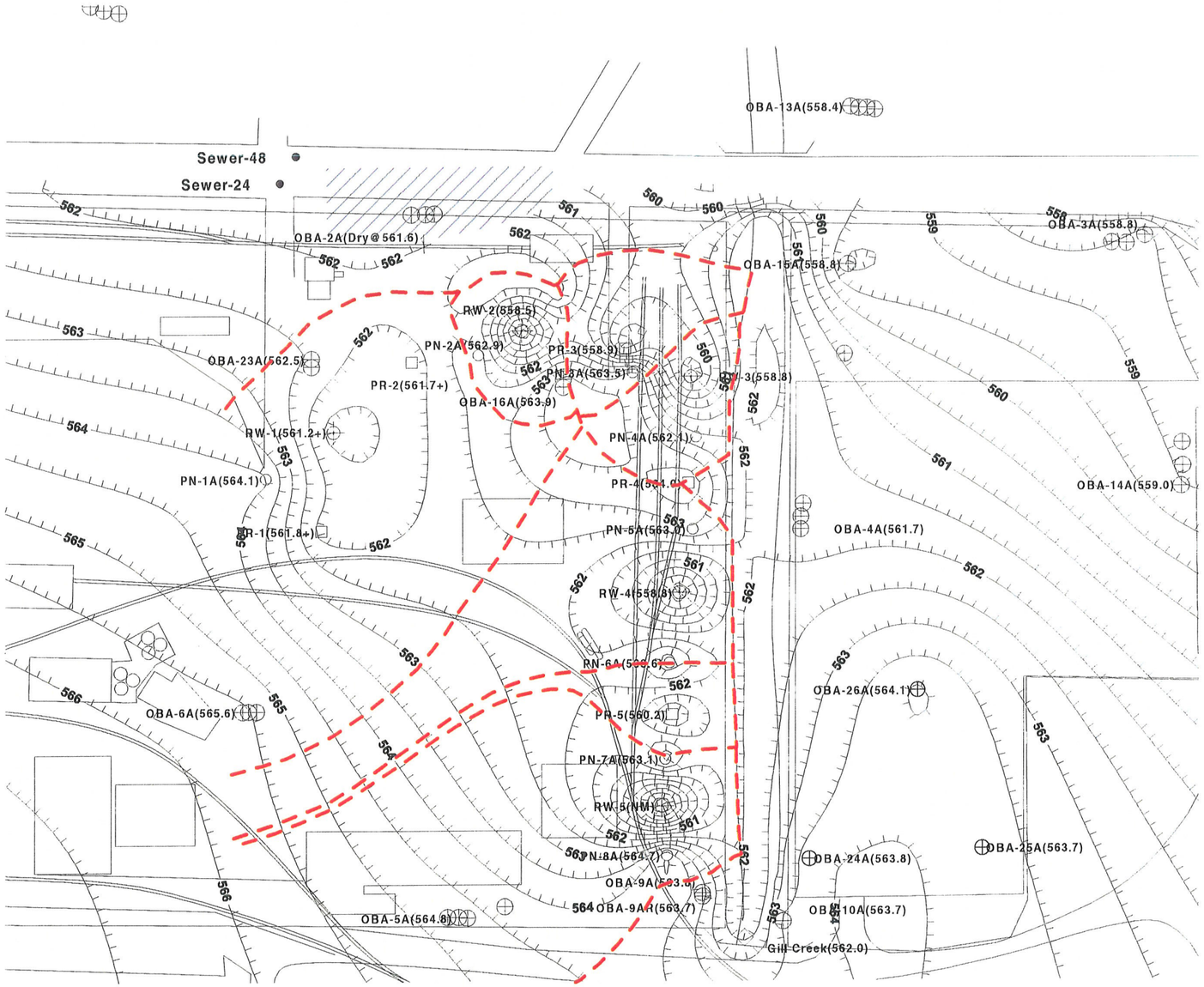
OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

LAW
LAWGIBB Group Member

POTENTIOMETRIC SURFACE -- A ZONE
(APRIL 25, 2000)

Job No.: 12000-8-0030

Figure 1



Well	Average Flow Rate(gpm)*
RW-1	2.4
RW-2	2.7
RW-3	14.2
RW-4	14.2
RW-5	16.3

*: Averaged using daily flow rates since previous monthly field measurements.

LEGEND

- GILL CREEK MONITORING POINT
- OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- WATER QUALITY MONITORING WELLS
- A/B ZONE PIEZOMETER NESTS
- GROUND WATER RECOVERY WELLS
- PASSIVE RELIEF WELLS
- SEWER INVERT
- PROPERTY LINE
- 565 — ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 0.5 FEET)
- ESTIMATED CAPTURE ZONE BOUNDARY
- ESTIMATED DRY AREA IN ZONE A

0 120 240

Scale 1 inch = 120 feet

NOTE

*: Well dry, elevation of bottom of A-Zone used in contouring.
+: Bottom of A-Zone elevation used in contouring.
●: Buffalo Avenue Sewer invert is assumed to be a groundwater sink.
The piezometric surface is estimated as the bottom of the A-zone.
The bottom of the A-zone along Buffalo Avenue was estimated from borings OBA-1A, OBA-2A, OBA-3A, and OBA-11A.

Data were obtained in Gill Creek at 12:06 am (562.0 feet) and 16:04 pm (562.1 feet).
The Gill Creek elevation (562.0 feet) was used in contouring in A zone.

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1995. CAPTURE ZONE BOUNDARY WAS DRAWN BASED THE FLOW PATHLINES GENERATED BY GWPATH.

OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

LAW
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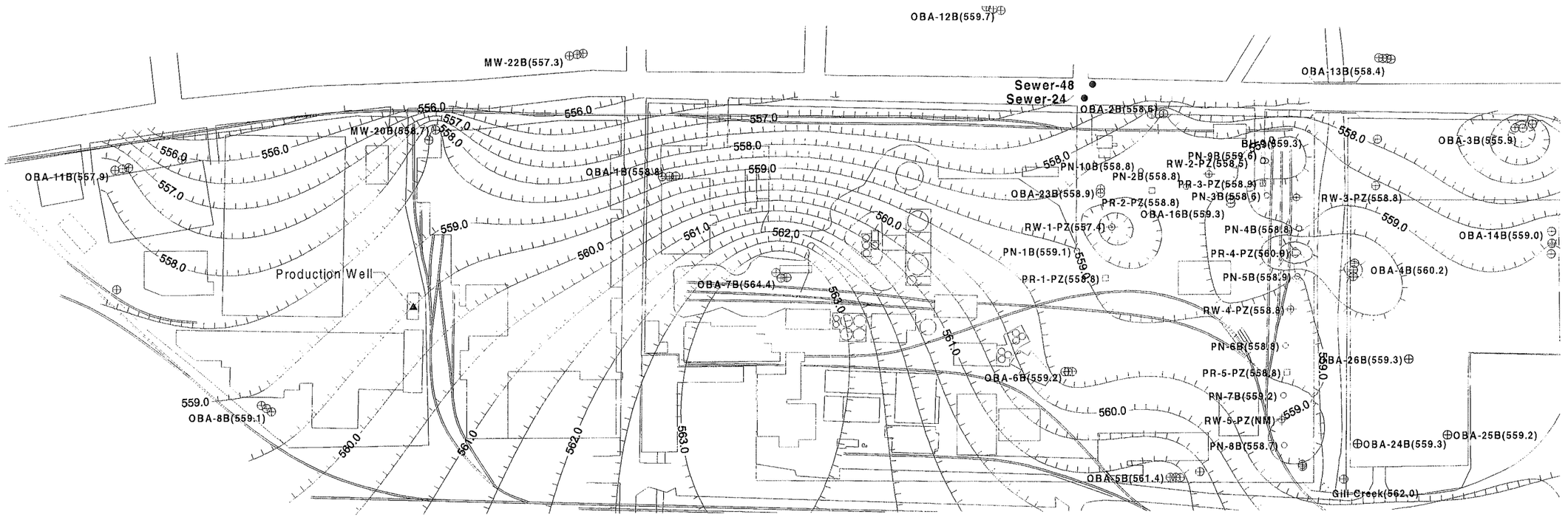
ESTIMATED CAPTURE ZONE AND POTENTIOMETRIC SURFACE -- A ZONE (APRIL 25, 2000)

Job No.: 12000-8-0030

Figure 1A



0 200 400

Scale 1 inch = 200 feet

LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT ELEVATION
- ——— PROPERTY LINE
- ——— 565 ——— ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 0.5 FEET)

Well	Average Flow Rate(gpm)*
RW-1	2.4
RW-2	2.7
RW-3	14.2
RW-4	14.2
RW-5	16.3

*: Averaged using daily flow rates since previous monthly field measurements.

NOTE

▲: Olin Production Well.
●: Buffalo Avenue Sewer invert is assumed to be a ground-water sink. The piezometric surface is not known. The ground water contours were estimated based on the sewer invert elevation. PN-2B elevation used as dummy points north of RW-2.

Data were obtained in Gill Creek at 12:06 am (562.0 feet) and 16:04 pm (562.1 feet). The Gill Creek elevation was not used in contouring the B zone but is included on the map for comparative purposes.

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1999.

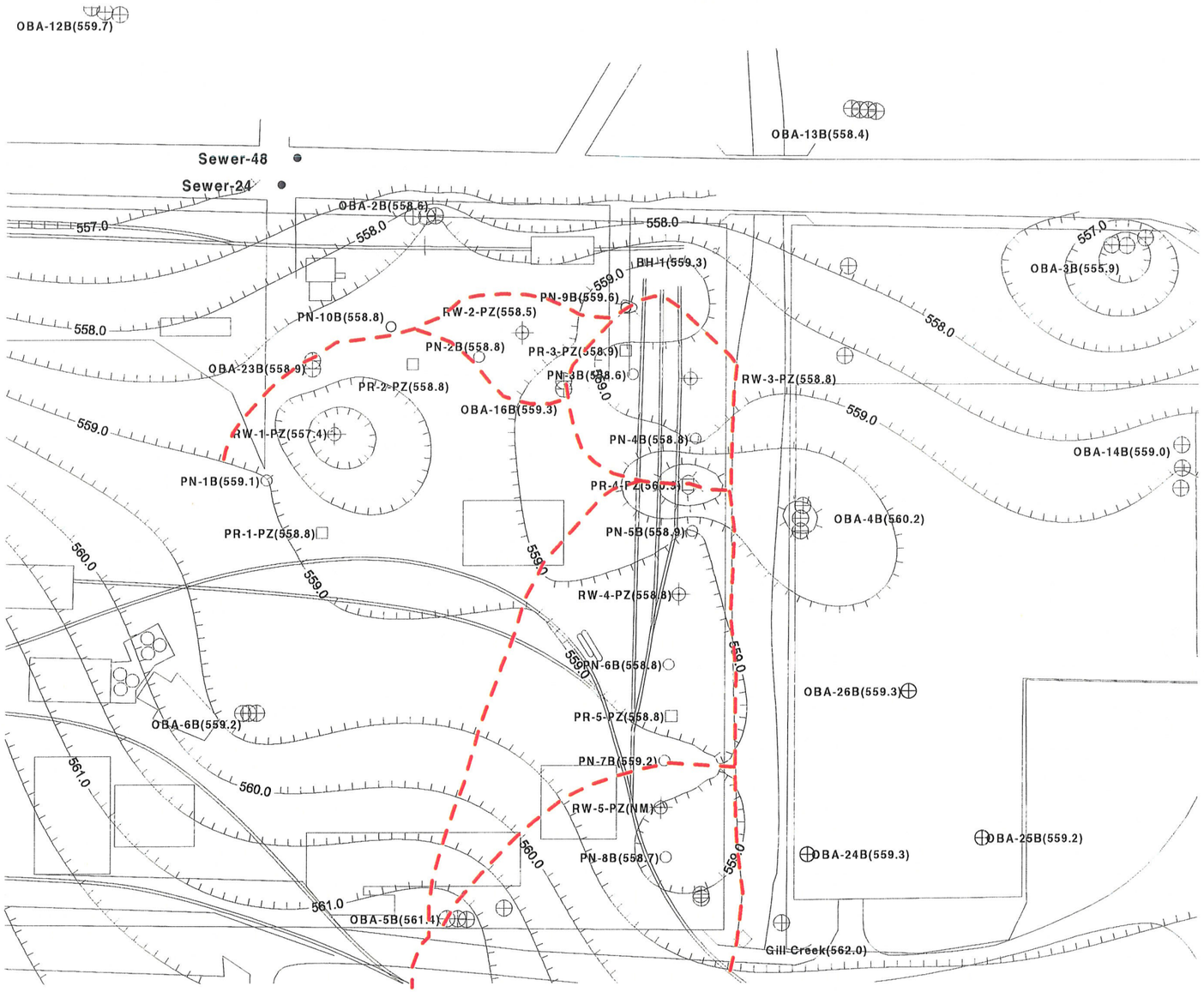
OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

LAW
LAWGIBB Group Member

POTENTIOMETRIC SURFACE -- B ZONE (APRIL 25, 2000)

Job No.: 12000-8-0030

Figure 2



Well	Average Flow Rate(gpm)*
RW-1	2.4
RW-2	2.7
RW-3	14.2
RW-4	14.2
RW-5	16.3

*: Averaged using daily flow rates since previous monthly field measurements.

LEGEND

- GILL CREEK MONITORING POINT
- OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- WATER QUALITY MONITORING WELLS
- A/B ZONE PIEZOMETER NESTS
- GROUND WATER RECOVERY WELLS (FLOW RATE FROM OMNX SYSTEM)
- PASSIVE RELIEF WELLS
- SEWER INVERT ELEVATION
- PROPERTY LINE
- 565 — ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 0.5 FEET)
- ESTIMATED CAPTURE ZONE BOUNDARY

0 120 240

Scale 1 inch = 120 feet

NOTE

*: Elevation not used in contouring.

▲: Olin Production Well.
●: Buffalo Avenue Sewer invert is assumed to be a ground-water sink. The piezometric surface is not known. The ground water conturs were estimated based on the sewer invert elevation. PN-2B elevation used as dummy points north of RW-2.

Data were obtained in Gill Creek at 12:06 am (562.0 feet) and 16:04 am (562.1 feet). The Gill Creek elevation was not used in contouring the B zone but is included on the map for comparative purposes.

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1999. CAPTURE ZONE BOUNDARY WAS DRAWN BASED THE FLOW PATHLINES GENERATED BY GWPATH.

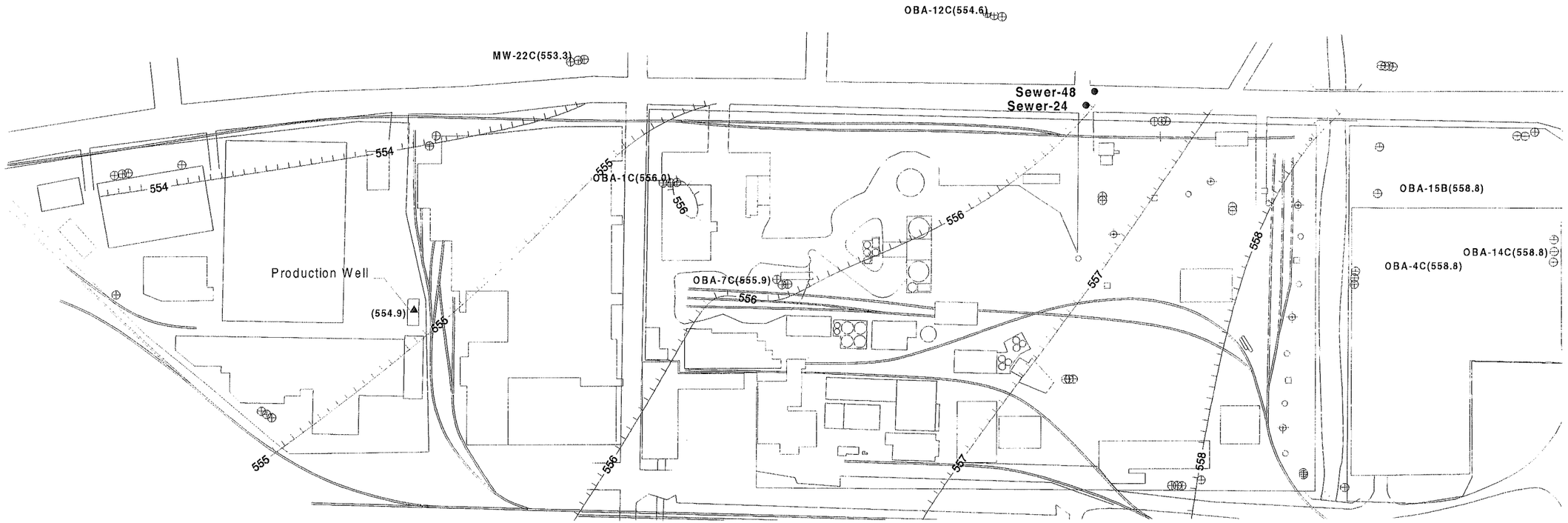
OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

LAW
LAWGIBB Group Member

ESTIMATED CAPTURE ZONE AND
POTENTIOMETRIC SURFACE -- B ZONE
(APRIL 25, 2000)

Job No.: 12000-8-0030

Figure 2A



LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS (FLOW RATE FROM OMNX SYSTEM)
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT
- ——— PROPERTY LINE
- 565 ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 1 FEET)

Well	Average Flow Rate(gpm)
Olin Production Well	503

0 200 400

Scale 1 inch = 200 feet

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1995.

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NIAGARA FALLS, NEW YORK

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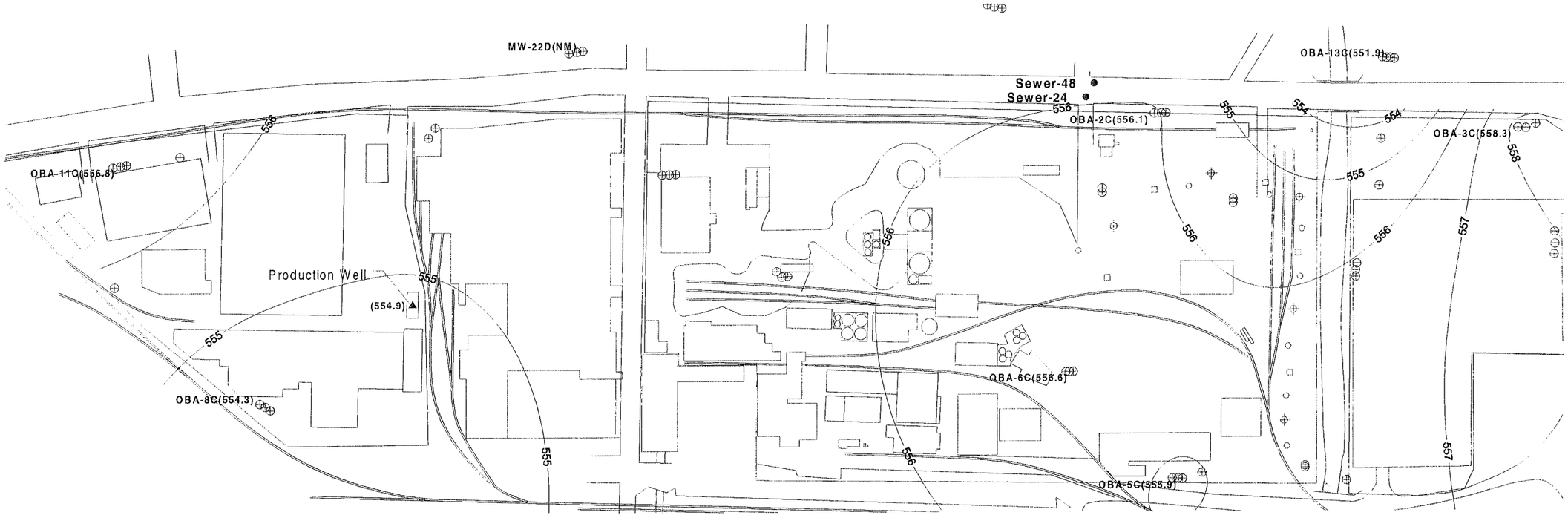
POTENTIOMETRIC SURFACE -- C ZONE
(APRIL 25, 2000)

Job No.: 12000-8-0030

Figure 3



N

LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS (FLOW RATE FROM OMNX SYSTEM)
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT
- ——— PROPERTY LINE
- ——— 565 ——— ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 1 FEET)

Well	Average Flow Rate(gpm)
Olin Production Well	503

0 200 400

Scale 1 inch = 200 feet

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1995.

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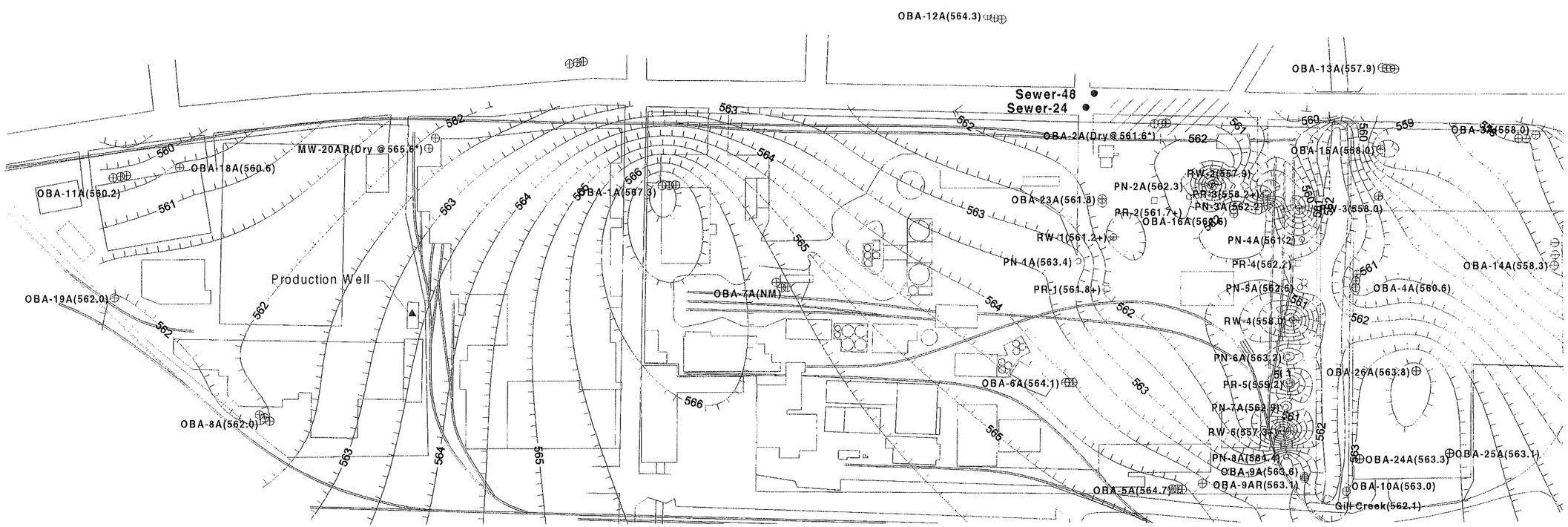
POTENTIOMETRIC SURFACE -- CD ZONE
(APRIL 25, 2000)

Job No.: 12000-8-0030

Figure 4



LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT
- PROPERTY LINE
- 565 ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 0.5 FEET)
- ESTIMATED DRY AREA IN ZONE A

Well	Average Flow Rate(gpm)*
RW-1	4.8
RW-2	5.6
RW-3	13.8
RW-4	14.8
RW-5	11.7

*: Averaged using daily flow rates since previous monthly field measurements.

0 200 400

Scale 1 inch = 200 feet

NOTE

*: Well dry, elevation of bottom of A-Zone used in contouring.
+: Bottom of A-Zone elevation used in contouring.
▲: Water Elevation not obtained from Olin Production Well.
●: Buffalo Avenue Sewer invert is assumed to be a groundwater sink. The piezometric surface is estimated as the bottom of the A-zone. The bottom of the A-zone along Buffalo Avenue was estimated from borings OBA-1A, OBA-2A, OBA-3A, and OBA-11A.

Data were obtained in Gill Creek at 13:09 pm (562.1 ft), 14:00 pm (562.0 feet) and 16:02 pm (562.1 feet).
The Gill Creek elevation (562.1 feet) was used in contouring in A zone.

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1999.

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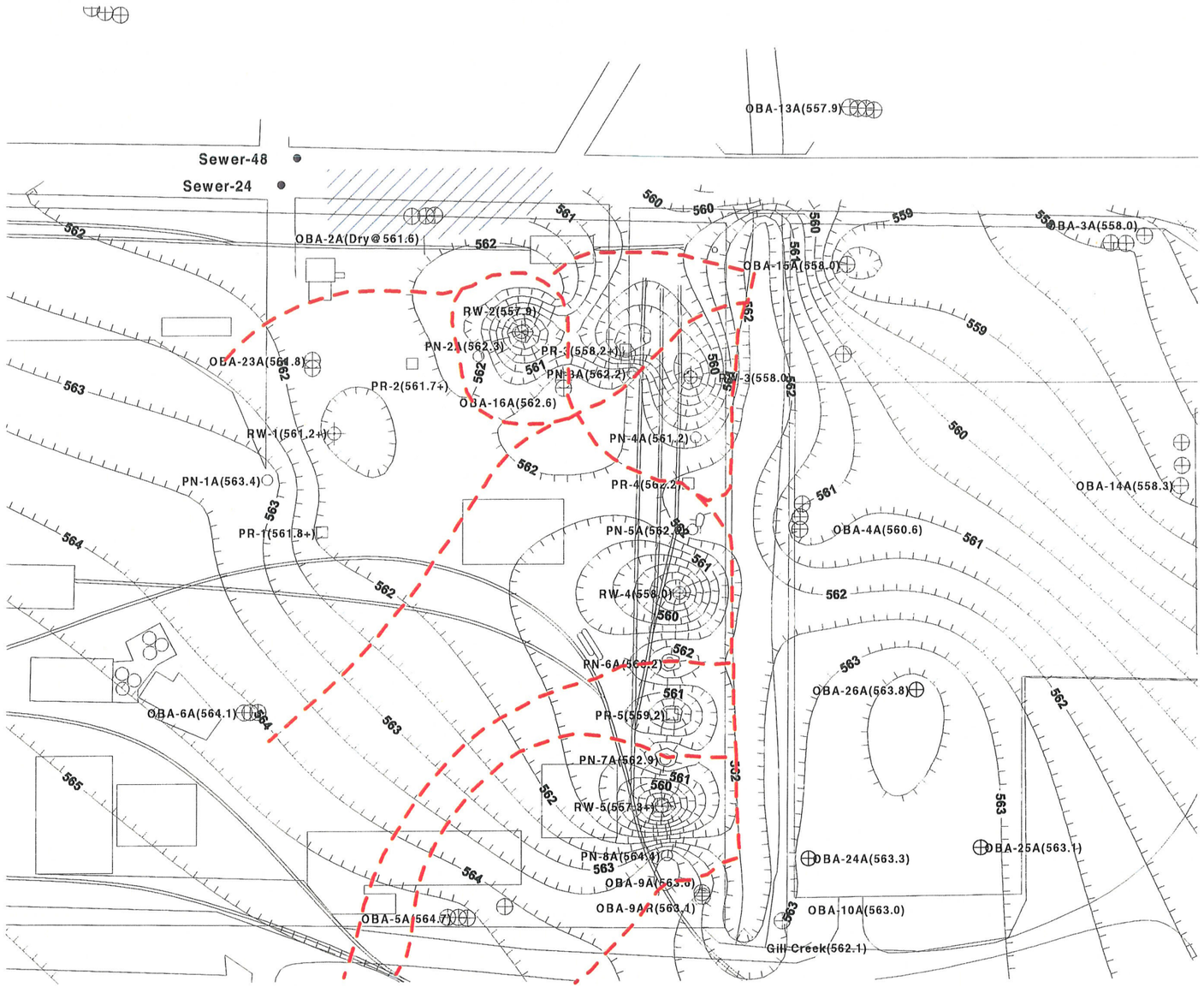
POTENTIOMETRIC SURFACE -- A ZONE
(MAY 8, 2000)

Job No.: 12000-8-0030

Figure 5



Well	Average Flow Rate(gpm)*
RW-1	4.8
RW-2	5.6
RW-3	13.8
RW-4	14.8
RW-5	11.7

*: Averaged using daily flow rates since previous monthly field measurements.

LEGEND

- GILL CREEK MONITORING POINT
- OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- WATER QUALITY MONITORING WELLS
- A/B ZONE PIEZOMETER NESTS
- GROUND WATER RECOVERY WELLS
- PASSIVE RELIEF WELLS
- SEWER INVERT
- PROPERTY LINE
- 565 — ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 0.5 FEET)
- ESTIMATED CAPTURE ZONE BOUNDARY
- ESTIMATED DRY AREA IN ZONE A

0 120 240

Scale 1 inch = 120 feet

NOTE

*: Well dry, elevation of bottom of A-Zone used in contouring.
+: Bottom of A-Zone elevation used in contouring.
●: Buffalo Avenue Sewer invert is assumed to be a groundwater sink.
The piezometric surface is estimated as the bottom of the A-zone.
The bottom of the A-zone along Buffalo Avenue was estimated from borings OBA-1A, OBA-2A, OBA-3A, and OBA-11A.

Data were obtained in Gill Creek at 13:09 pm (562.1 ft), 14:00 pm (562.0 feet) and 16:02 pm (562.1 feet).
The Gill Creek elevation (562.1 feet) was used in contouring in A zone.

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1995. CAPTURE ZONE BOUNDARY WAS DRAWN BASED THE FLOW PATHLINES GENERATED BY GWPATH.

OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

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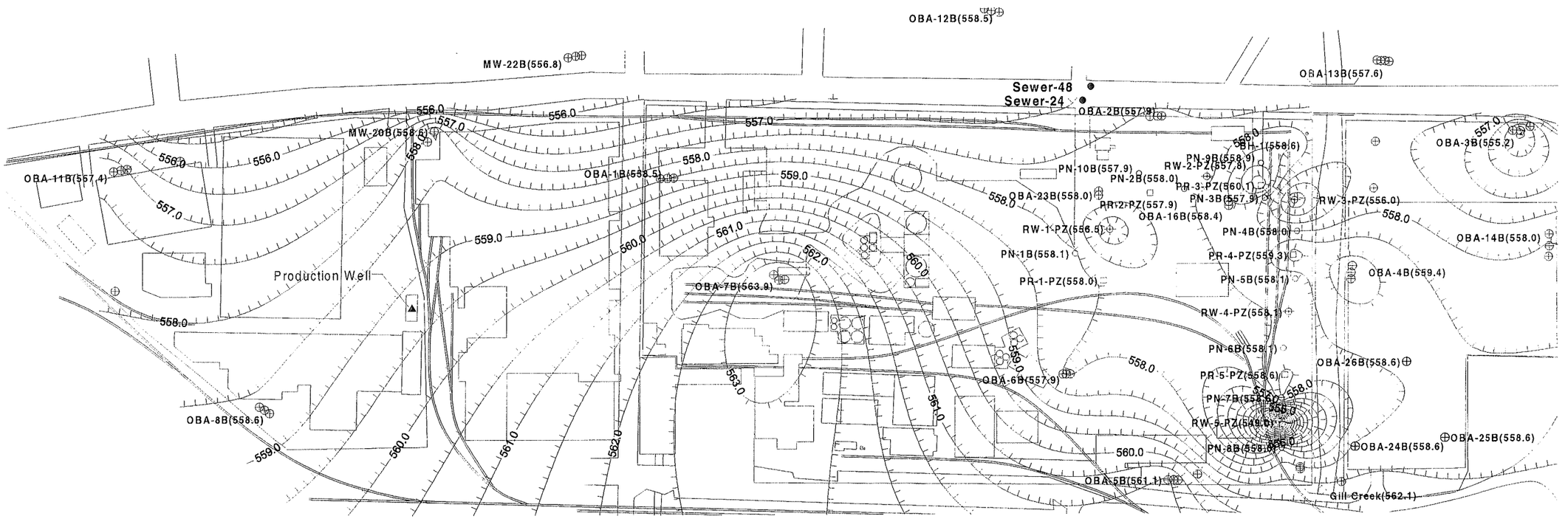
ESTIMATED CAPTURE ZONE AND
POTENTIOMETRIC SURFACE -- A ZONE
(MAY 8, 2000)

Job No.: 12000-8-0030

Figure 5A



0 200 400

Scale 1 inch = 200 feet

LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⌖ GROUND WATER RECOVERY WELLS
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT ELEVATION
- ——— PROPERTY LINE
- ——— 565 ——— ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 0.5 FEET)

Well	Average Flow Rate(gpm)*
RW-1	4.8
RW-2	5.6
RW-3	13.8
RW-4	14.8
RW-5	11.7

*: Averaged using daily flow rates since previous monthly field measurements.

NOTE

▲: Olin Production Well.
●: Buffalo Avenue Sewer invert is assumed to be a ground-water sink. The piezometric surface is not known. The ground water contours were estimated based on the sewer invert elevation. PN-2B elevation used as dummy points north of RW-2.

Data were obtained in Gill Creek at 13:09 pm (562.1 ft), 14:00 pm (562.0 feet) and 16:02 pm (562.1 feet). The Gill Creek elevation was not used in contouring the B zone but is included on the map for co nparative purposes.

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1999.

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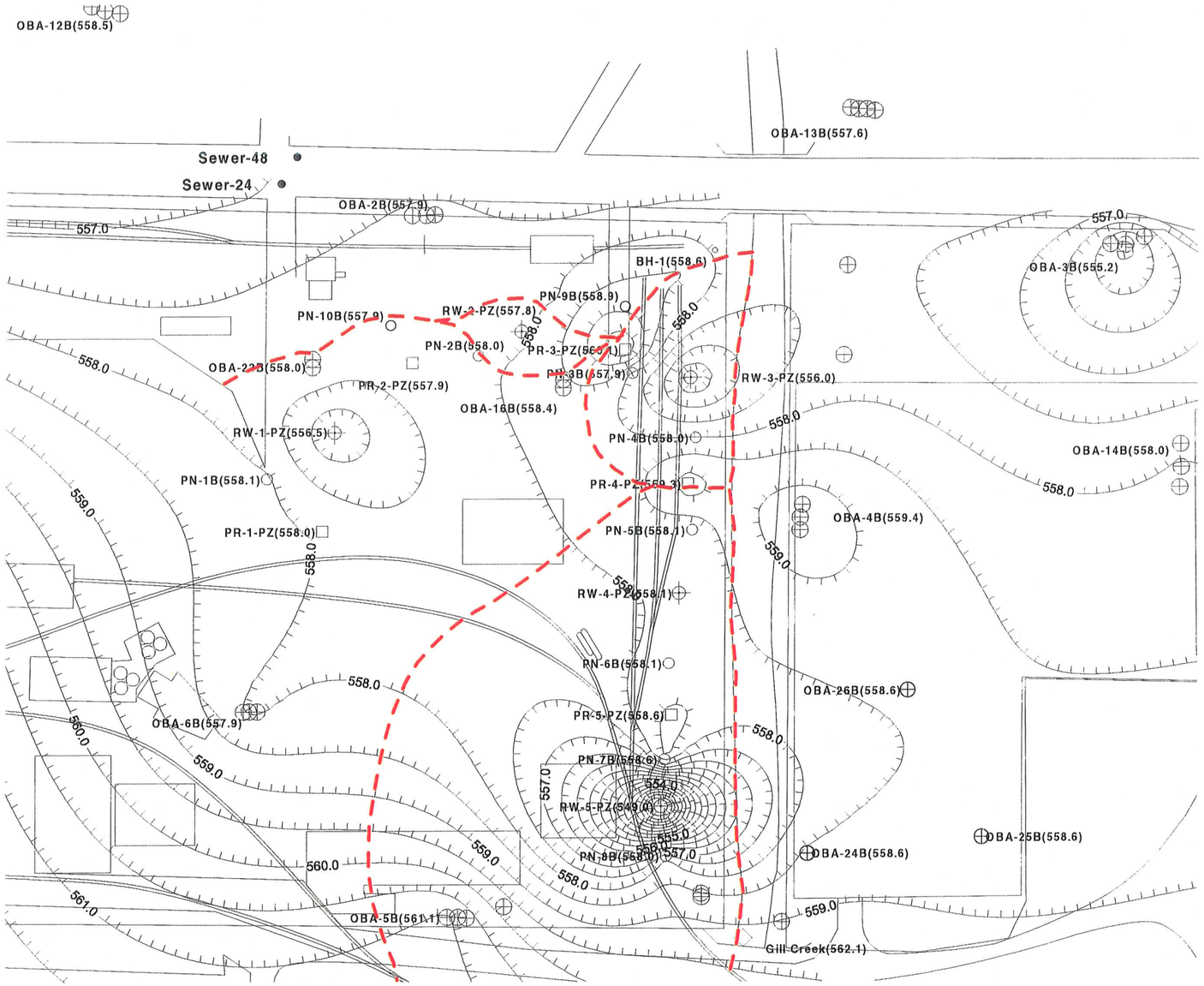
POTENTIOMETRIC SURFACE -- B ZONE
(MAY 8, 2000)

Job No.: 12000-8-0030

Figure 6



Well	Average Flow Rate(gpm)*
RW-1	4.8
RW-2	5.6
RW-3	13.8
RW-4	14.8
RW-5	11.7

*: Averaged using daily flow rates since previous monthly field measurements.

LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS (FLOW RATE FROM OMNX SYSTEM)
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT ELEVATION
- PROPERTY LINE
- 565 ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 0.5 FEET)
- ESTIMATED CAPTURE ZONE BOUNDARY

0 120 240

Scale 1 inch = 120 feet

NOTE

*: Elevation not used in contouring.

▲: Olin Production Well.
●: Buffalo Avenue Sewer invert is assumed to be a ground-water sink. The piezometric surface is not known. The ground water conturs were estimated based on the sewer invert elevation. PN-2B elevation used as dummy points north of RW-2.

Data were obtained in Gill Creek at 13:09 pm (562.1 ft), 14:00 pm (562.0 feet) and 16:02 pm (562.1 feet). The Gill Creek elevation was not used in contouring the B zone but is included on the map for comparative purposes.

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1999. CAPTURE ZONE BOUNDARY WAS DRAWN BASED THE FLOW PATHLINES GENERATED BY GWPATH.

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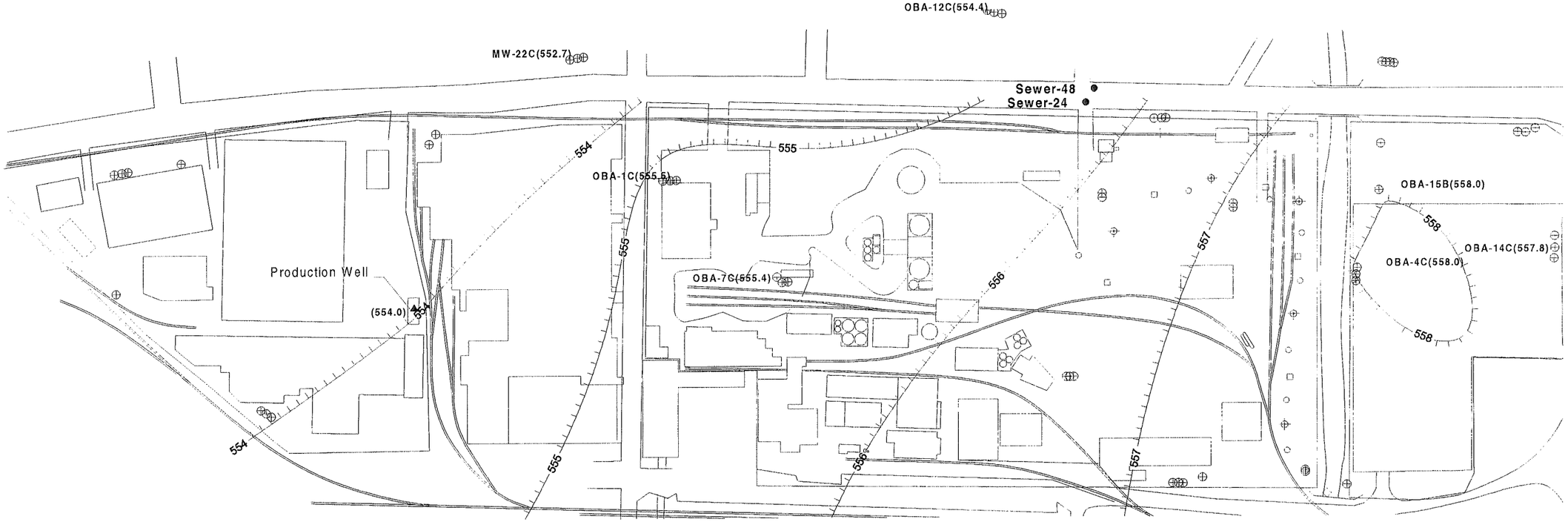
ESTIMATED CAPTURE ZONE AND
POTENTIOMETRIC SURFACE -- B ZONE
(MAY 8, 2000)

Job No.: 12000-8-0030

Figure 6A



LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS (FLOW RATE FROM OMNX SYSTEM)
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT
- ——— PROPERTY LINE
- ——— 565 ——— ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 1 FEET)

Well	Average Flow Rate(gpm)
Olin Production Well	650

0 200 400

Scale 1 inch = 200 feet

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1995.

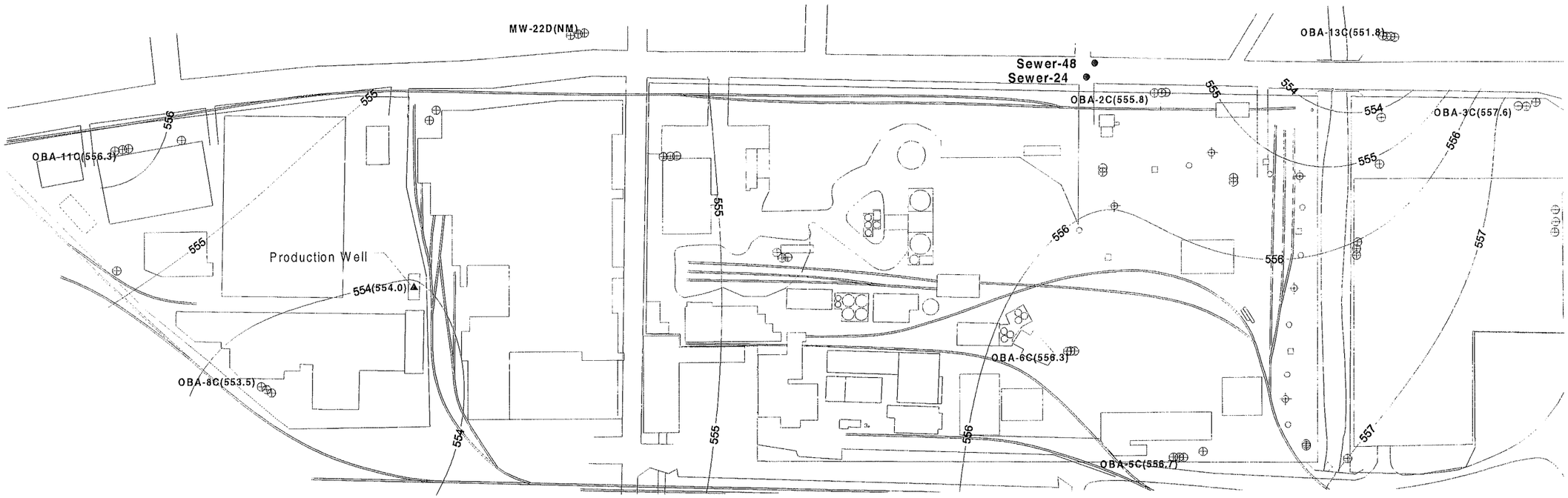
OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

LAW
LAWGIBB Group Member

POTENTIOMETRIC SURFACE -- C ZONE
(MAY 8, 2000)

Job No.: 12000-8-0030

Figure 7



N

LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS (FLOW RATE FROM OMNX SYSTEM)
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT
- ——— PROPERTY LINE
- ——— 565 ——— ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 1 FEET)

Well	Average Flow Rate(gpm)
Olin Production Well	650

0 200 400

Scale 1 inch = 200 feet

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1995.

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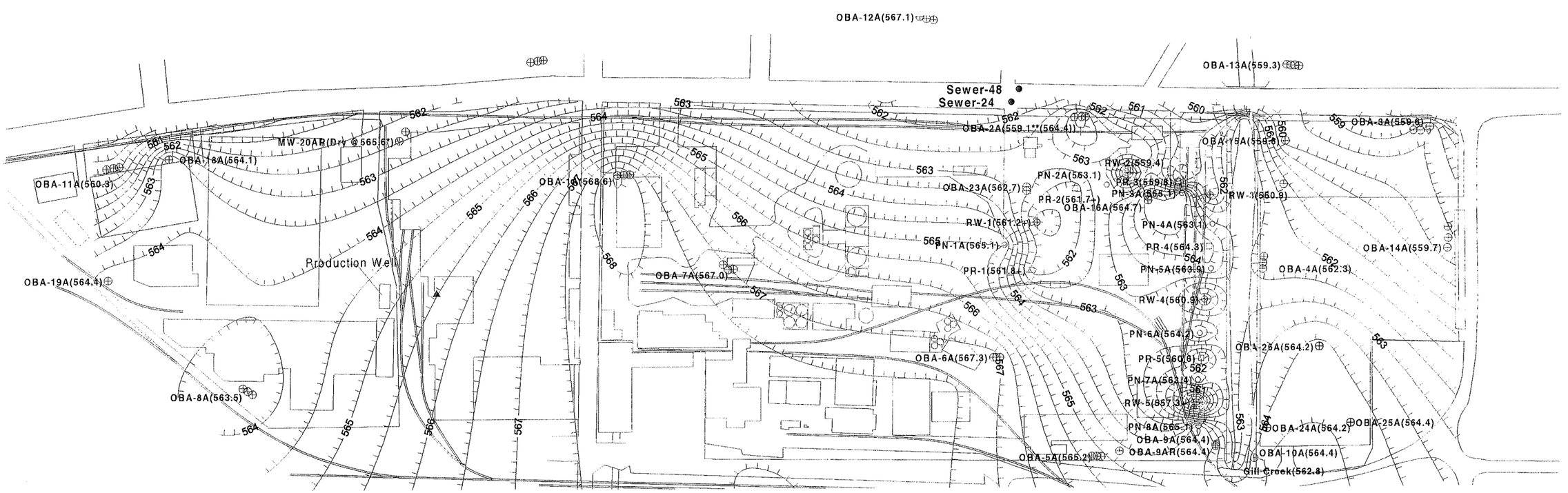
POTENTIOMETRIC SURFACE -- CD ZONE
(MAY 8, 2000)

Job No.: 12000-8-0030

Figure 8



LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT
- PROPERTY LINE
- 565 ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 0.5 FEET)
- ESTIMATED DRY AREA IN ZONE A

Well	Average Flow Rate(gpm)*
RW-1	3.8
RW-2	8.1
RW-3	16.0
RW-4	14.0
RW-5	10.3

* : Averaged using daily flow rates since previous monthly field measurements.

0 200 400

Scale 1 inch = 200 feet

NOTE

* : Well dry, elevation of bottom of A-Zone used in contouring.
+ : Bottom of A-Zone elevation used in contouring.
**: 559.1 seems suspect, 564.4 used in contouring of the A-zone map.
▲: Water Elevation not obtained from Olin Production Well.
●: Buffalo Avenue Sewer invert is assumed to be a groundwater sink. The piezometric surface is estimated as the bottom of the A-zone. The bottom of the A-zone along Buffalo Avenue was estimated from borings OBA-1A, OBA-2A, OBA-3A, and OBA-11A.

Data were obtained in Gill Creek at 09:48am (563.0 ft), 11:53 am (562.8 ft), and 13.55 pm (562.9 ft).
The Gill Creek elevation (562.8 feet) was used in contouring in A zone.

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1999.

OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

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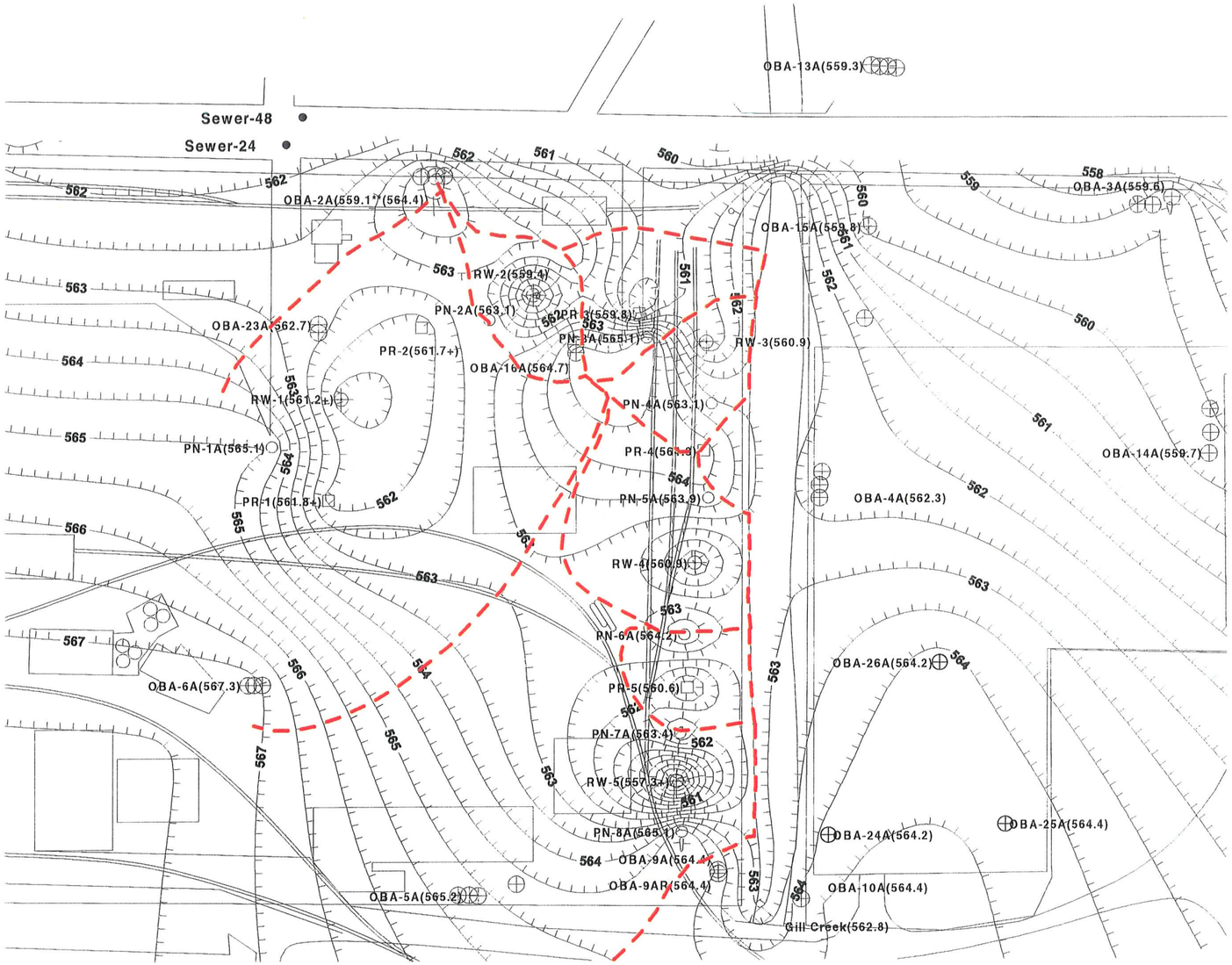
LAWGIBB Group Member

POTENTIOMETRIC SURFACE -- A ZONE
(JUNE 15, 2000)

Job No.: 12000-8-0030

Figure 9



Well	Average Flow Rate(gpm)*
RW-1	3.8
RW-2	8.1
RW-3	16.0
RW-4	14.0
RW-5	10.3

*: Averaged using daily flow rates since previous monthly field measurements.

LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT
- PROPERTY LINE
- 565 ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 0.5 FEET)
- ESTIMATED CAPTURE ZONE BOUNDARY
- ESTIMATED DRY AREA IN ZONE A

0 120 240

Scale 1 inch = 120 feet

NOTE

*: Well dry, elevation of bottom of A-Zone used in contouring.
+: Bottom of A-Zone elevation used in contouring.
**: 559.1 seems suspect, 564.4 used in contouring of the A zone map.
●: Buffalo Avenue Sewer invert is assumed to be a groundwater sink.
The piezometric surface is estimated as the bottom of the A-zone.
The bottom of the A-zone along Buffalo Avenue was estimated from borings OBA-1A, OBA-2A, OBA-3A, and OBA-11A.

Data were obtained in Gill Creek at 09:48 am (562.9 ft), 11.53 am (562.8 ft) and 13:55 pm (563.0 ft).
The Gill Creek elevation (562.8 feet) was used in contouring in A zone.

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1995. CAPTURE ZONE BOUNDARY WAS DRAWN BASED THE FLOW PATHLINES GENERATED BY GWPATH.

OLIN CHEMICAL
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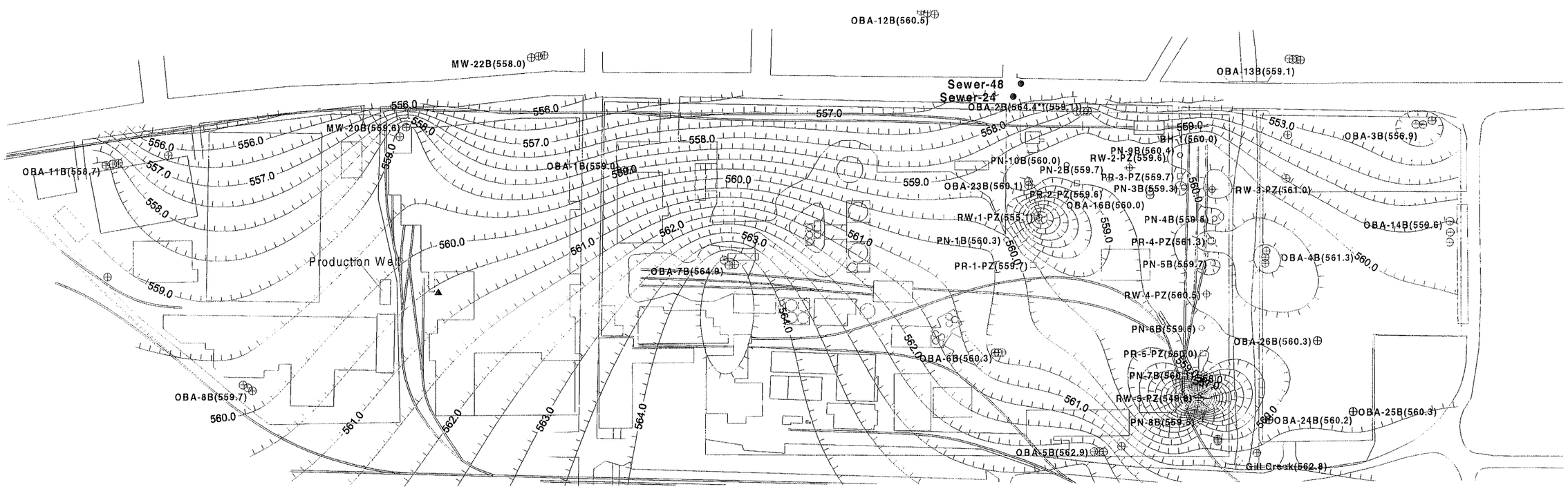
ESTIMATED CAPTURE ZONE AND
POTENTIOMETRIC SURFACE -- A ZONE
(JUNE 15, 2000)

Job No.: 12000-8-0030

Figure 9A



0 200 400

Scale 1 inch = 200 feet

LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT ELEVATION
- ——— PROPERTY LINE
- 565 ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 0.5 FEET)

Well	Average Flow Rate(gpm)*
RW-1	3.8
RW-2	8.1
RW-3	16.0
RW-4	14.0
RW-5	10.3

*: Averaged using daily flow rates since previous monthly field measurements.

NOTE

▲: Olin Production Well.
**: 564.4 seems suspect, 559.1 used in contouring of B zone map.
●: Buffalo Avenue Sewer invert is assumed to be a ground-water sink. The piezometric surface is not known. The ground water contours were estimated based on the sewer invert elevation. PN-2B elevation used as dummy points north of RW-2.

Data were obtained in Gill Creek at 09:48 am (563.0 ft), 11:53 am (562.8 ft) and 13.55 pm (562.9 ft). The Gill Creek elevation was not used in contouring the B zone but is included on the map for comparative purposes.

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1999.

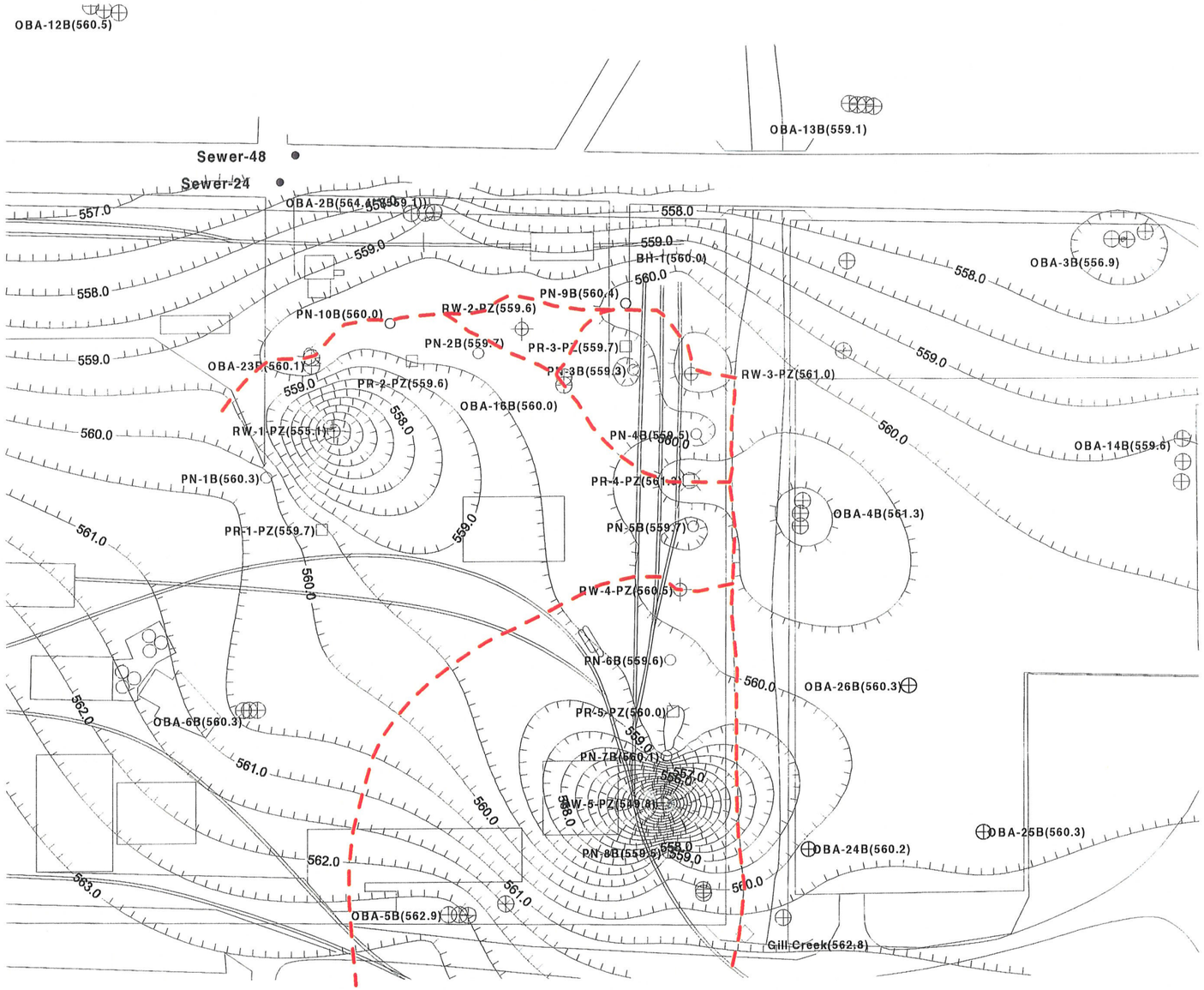
OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

LAW
LAWGIBB Group Member

POTENTIOMETRIC SURFACE -- B ZONE
(JUNE 15, 2000)

Job No.: 12000-8-0030

Figure 10



Well	Average Flow Rate(gpm)*
RW-1	3.8
RW-2	8.1
RW-3	16.0
RW-4	14.0
RW-5	10.3

*: Averaged using daily flow rates since previous monthly field measurements.

LEGEND

- GILL CREEK MONITORING POINT
- OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- WATER QUALITY MONITORING WELLS
- A/B ZONE PIEZOMETER NESTS
- GROUND WATER RECOVERY WELLS (FLOW RATE FROM OMNX SYSTEM)
- PASSIVE RELIEF WELLS
- SEWER INVERT ELEVATION
- PROPERTY LINE
- 565 — ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 0.5 FEET)
- ESTIMATED CAPTURE ZONE BOUNDARY

0 120 240

Scale 1 inch = 120 feet

NOTE

*: Elevation not used in contouring.
**: 564.4 seems suspect, 559.1 used in contouring of the B zone map.
▲: Olin Production Well.
●: Buffalo Avenue Sewer invert is assumed to be a ground-water sink. The piezometric surface is not known. The ground water conturs were estimated based on the sewer invert elevation. PN-2B elevation used as dummy points north of RW-2.

Data were obtained in Gill Creek at 09:48 am (563.0 ft), 11:53 am (562.8 ft) and 13:55 pm (562.9 feet). The Gill Creek elevation was not used in contouring the B zone but is included on the map for comparative purposes.

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1999. CAPTURE ZONE BOUNDARY WAS DRAWN BASED THE FLOW PATHLINES GENERATED BY GWPATH.

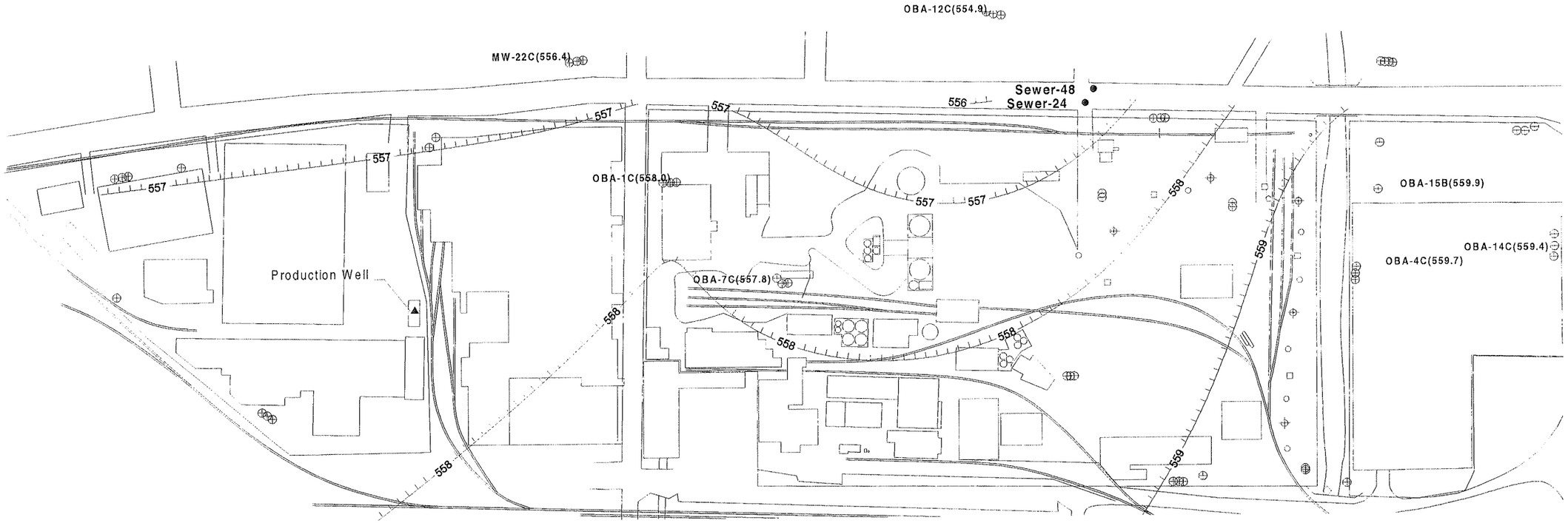
OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

LAW
LAWGIBB Group Member

ESTIMATED CAPTURE ZONE AND
POTENTIOMETRIC SURFACE -- B ZONE
(JUNE 15, 2000)

Job No.: 12000-8-0030

Figure 10A



LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS (FLOW RATE FROM OMNX SYSTEM)
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT
- PROPERTY LINE
- 565 ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 1 FEET)

Well	Average Flow Rate(gpm)
Olin Production Well	NA*

The production well was down for maintenance on 6/14 - 6/15.

0 200 400

Scale 1 inch = 200 feet

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1995.

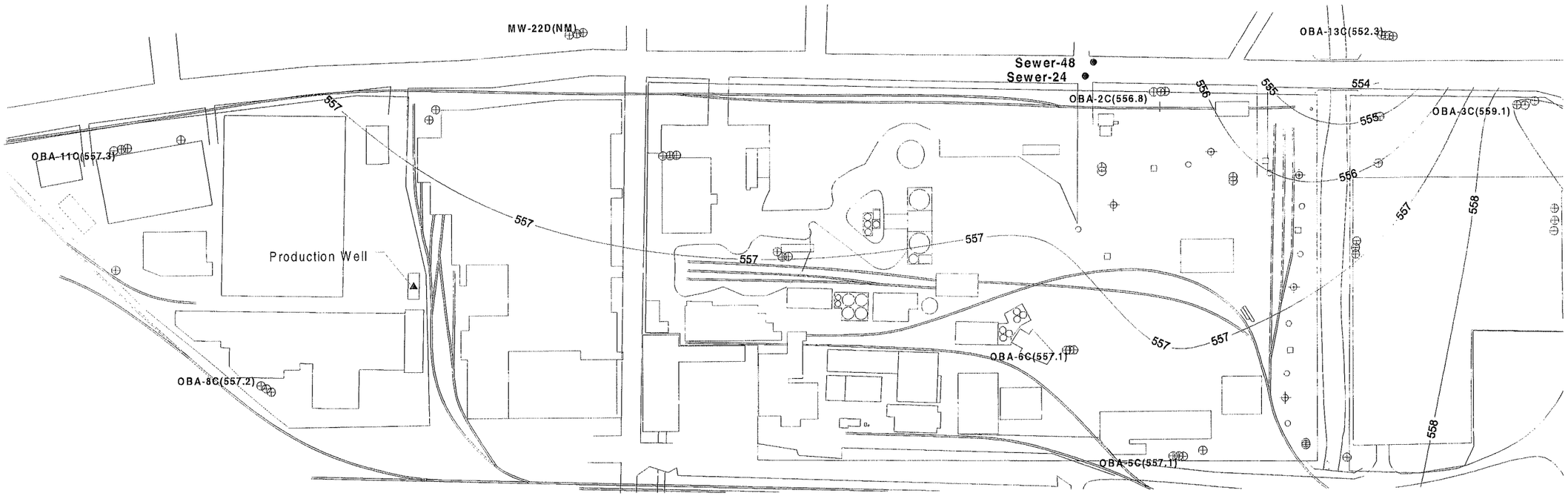
OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

LAW
LAWGIBB Group Member

POTENTIOMETRIC SURFACE -- C ZONE
(JUNE 15, 2000)

Job No.: 12000-8-0030

Figure 11



LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL (FLOW RATE FROM DUPONT)
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS (FLOW RATE FROM OMNX SYSTEM)
- □ PASSIVE RELIEF WELLS
- ● SEWER INVERT
- ——— PROPERTY LINE
- 565 ESTIMATED GROUND-WATER CONTOUR LINES (CONTOUR INTERVAL: 1 FEET)

Well	Average Flow Rate(gpm)
Olin Production Well	NA*

The production well was down for maintenance on 6/14 - 6/15.

0 200 400

Scale 1 inch = 200 feet

POTENTIOMETRIC SURFACE CONTOUR GENERATED USING SURFER FOR WINDOWS BY GOLDEN SOFTWARE, INC. 1995.

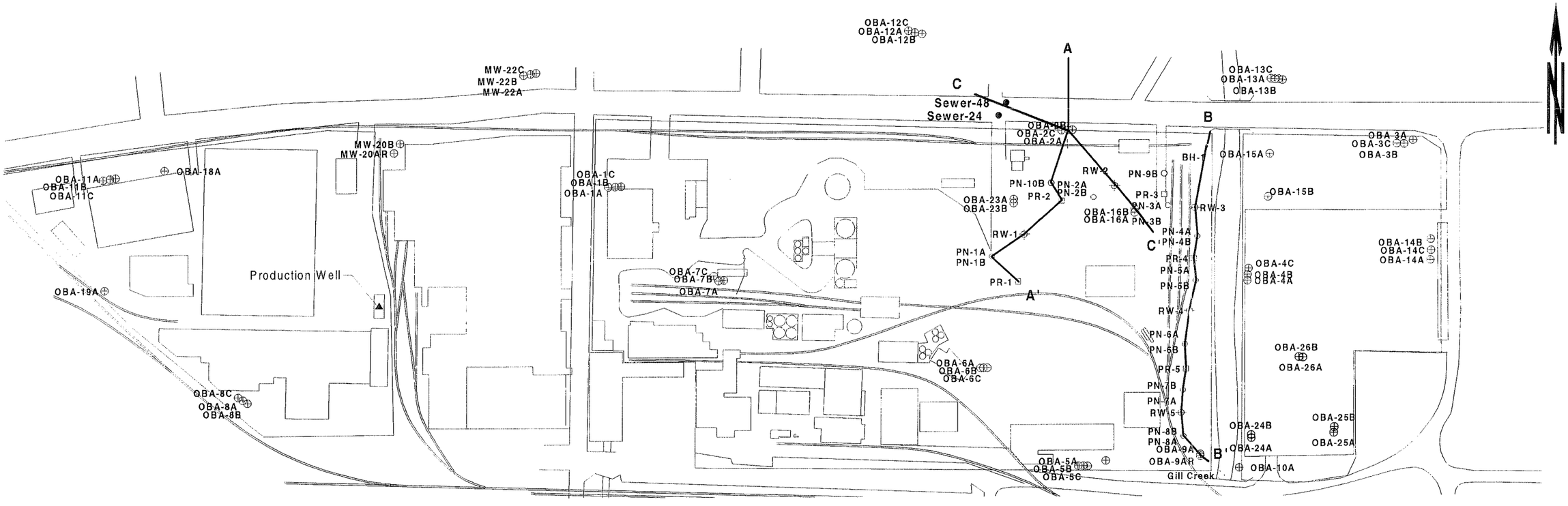
OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

LAW
LAWGIBB Group Member

POTENTIOMETRIC SURFACE -- CD ZONE
(JUNE 15, 2000)

Job No.: 12000-8-0030

Figure 12



LEGEND

- ◇ GILL CREEK MONITORING POINT
- ▲ OLIN PRODUCTION WELL
- ⊕ WATER QUALITY MONITORING WELLS
- ○ A/B ZONE PIEZOMETER NESTS
- ⊕ GROUND WATER RECOVERY WELLS
- □ PASSIVE RELIFF WELLS
- ● SEWER INVERT ELEVATION
- ——— PROPERTY LINE
- A ——— A' HYDRAGEOLOGIC CROSS SECTION

0 200 400

Scale 1 inch = 200 feet

OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

LAW
LAWGIBB Group Member

CROSS SECTION LOCATION MAP

Job No.: 12000-8-0030

Figure A4-1

A
North

A'
South

Buffalo Avenue

Ground Surface

OBA-2A
OBA-2B
OBA-2C
PN-10B
PR-2
RW-1
PN-1A
PN-1B
PR-1

Fill:
Brown-black gravel
sand and silt
with some clay, coal
and brick fragments

Clay(CL):
Brown-tan and
Brown-gray mottled
with little silt

559.1*(564.4)

Top of Dolostone

565.1

A-ZONE

A-ZONE

BT

560.0

559.9

560.3

559.6

564.4**(559.1)

B-ZONE

B-ZONE

48" Sewer
Invert

24" Sewer
Invert

556.8

B-ZONE FRACTURES

B-ZONE FRACTURES

Fractured

B-ZONE

547.8

B-ZONE

C-ZONE

ELEVATION (FT)

570
566
562
558
554
550
546
542
538

4
SCALE
IN FEET
0
40

Vertical Exaggeration 10x

Down to 520.3

NOTE

▽ : Ground-Water elevation measured on 6/15/00.

* : Suspect Data, 564.4 was posted.

** : Suspect data, 559.1 was posted.

OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

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LAWGIBB Group Member

Hydrogeologic Cross Section AA'

Job Number 12000-8-0030

Figure A4-2

B North

B' South

ELEVATION (FT)

570
566
562
558
554
550
546
542
538

BH-1

Ground Surface

RW-3 PN-4A PN-4B PR-4 PN-5A PN-5B RW-4 PN-6A PN-6B PR-5 PN-7A PN-7B RW-5 PN-8A PN-8B OBA-9AR

Gravel

Fill:
Brown, gray and black
sand and silt and
trace clay with brick fragments,
clinkers, and some gravel

Gray Fine
Sand and Clay

Top of Dolostone

560.0

560.9

563.1

559.5

564.3

563.9

559.7

560.9

564.2

559.6

560.6

563.4

560.1

Gill Creek
Water Level
562.8

Clayey Sand with
Brick Dolostone fragments

565.1

559.5

564.4

Soft Black
Silty
Clay

A-ZONE

B-ZONE

B-ZONE FRACTURES

547.3

BT

4
SCALE
IN FEET
0 40

Vertical Exaggeration 10x

NOTE

▽ : Ground-Water elevation measured on 6/15/00

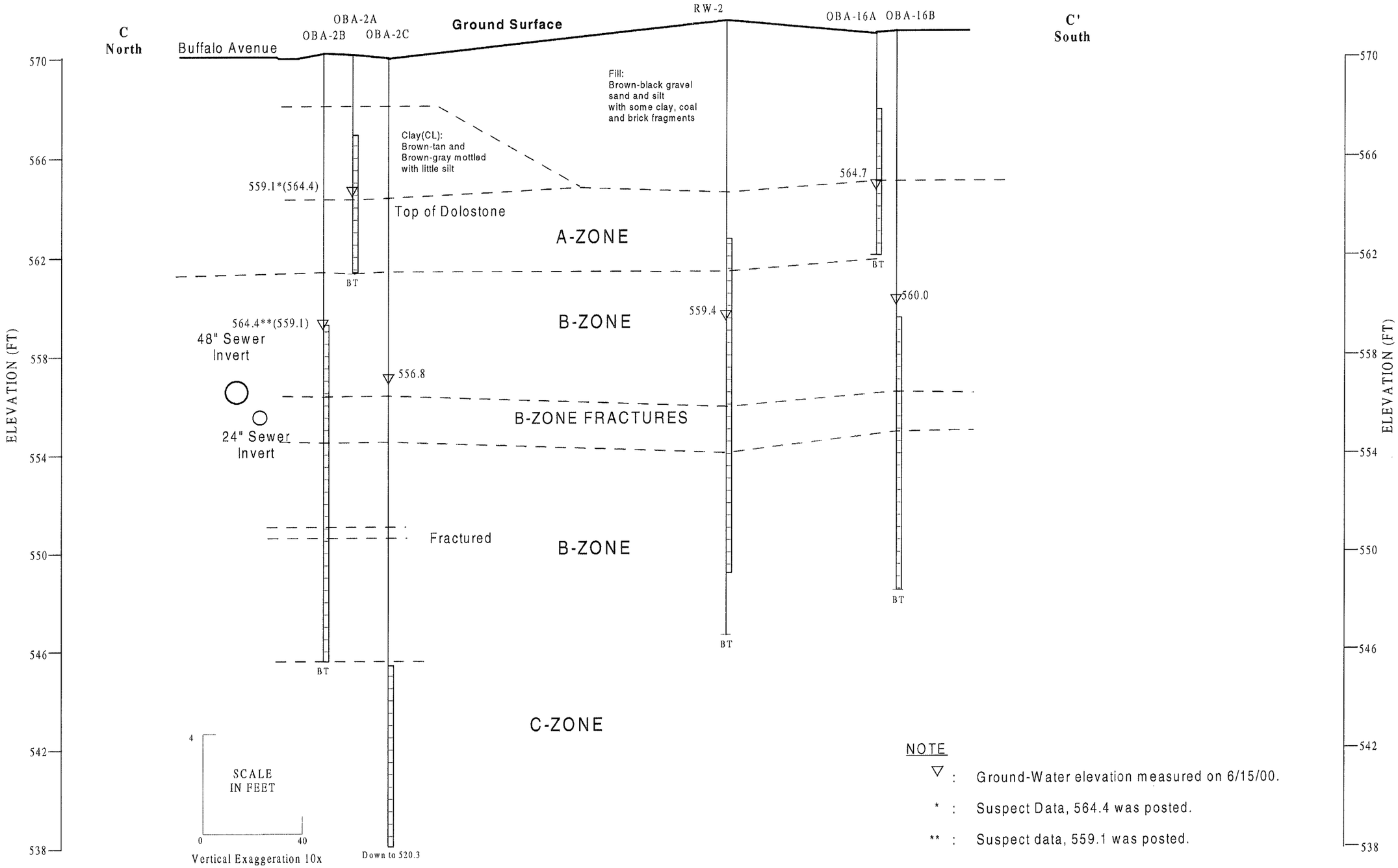
OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

LAW
LAWGIBB Group Member

Hydrogeologic Cross Section BB'

Job Number 12000-8-0030

Figure A4-3



NOTE

▽ : Ground-Water elevation measured on 6/15/00.

* : Suspect Data, 564.4 was posted.

** : Suspect data, 559.1 was posted.

OLIN CHEMICAL
NIAGARA FALLS, NEW YORK

LAW
LAWGIBB Group Member

Hydrogeologic Cross Section CC'

Job Number 12000-8-0030

Figure A4-4

Olin Niagara Falls Plant Site: Plant 2 Area Remediation
Groundwater Contaminant Mass Removed

ORGANICS **Q2-00**

WELL	conc [A] mg/l	conv liter / gal	conv lb /mg	conversion lb/gallon	conversion gal/lb	flow gal/qtr	MASS lb/qtr
RW1	46.6	3.8	2.20E-06	0.00038958	1190476.19	435,573	169.69
RW2	20.4	3.8	2.20E-06	0.00017054	1190476.19	798,080	136.11
RW3	1.5	3.8	2.20E-06	0.00001258	1190476.19	1,924,877	24.22
RW4	29.2	3.8	2.20E-06	0.00024411	1190476.19	1,870,113	456.52
RW5	53.3	3.8	2.20E-06	0.00044559	1190476.19	1,634,702	728.40
TOTAL							**1514.9**

MERCURY **Q2-00**

WELL	conc [B] mg/l	conv liter / gal	conv lb /mg	conversion lb/gallon	conversion gal/lb	flow gal/qtr	MASS lb/qtr
RW1	0.008	3.8	2.20E-06	0.00000007	1190476.19	435,573	0.03
RW2	0.004	3.8	2.20E-06	0.00000003	1190476.19	798,080	0.03
RW3	0.0003	3.8	2.20E-06	0.00000000	1190476.19	1,924,877	0.00
RW4	0	3.8	2.20E-06	0.00000000	1190476.19	1,870,113	0.00
RW5	0	3.8	2.20E-06	0.00000000	1190476.19	1,634,702	0.00
TOTAL							**0.06**

PESTICIDES **Q2-00**

WELL	conc [A] mg/l	conv liter / gal	conv lb /mg	conversion lb/gallon	conversion gal/lb	flow gal/qtr	MASS lb/qtr
RW1	0.042	3.8	2.20E-06	0.00000035	1190476.19	435,573	0.15
RW2	0.177	3.8	2.20E-06	0.00000148	1190476.19	798,080	1.18
RW3	0.096	3.8	2.20E-06	0.00000080	1190476.19	1,924,877	1.55
RW4	0.323	3.8	2.20E-06	0.00000270	1190476.19	1,870,113	5.05
RW5	0.170	3.8	2.20E-06	0.00000142	1190476.19	1,634,702	2.32
TOTAL							**10.3**

[A] = Total of parameter group in quarterly sample from recovery well discharge header.

[B] = total mercury

Olin Niagara Falls
Plant 2 Area Remediation

Summary: Contaminant Mass and Groundwater Extracted
Since system start-up: December - 1997

Quarter	organics		mercury		pesticides		g.w. extracted	
	lb	Ann. Tot.	lb	Ann. Tot.	lb	Ann. Tot.	gal	Ann. Tot.
Startup/Q1-98 [est]	27.81		0.02		0.2		210,000	
Q2-98	154.5		0.1		1.3		1,175,799	
Q3-98	595.5		0.6		4.9		2,583,159	
Q4-98	1273.1		0.1		5.2		4,054,996	
		2,051		1		12		8,023,954
Q1-99	817.3		0.05		8.5		4,233,521	
Q2-99	1034.7		0.05		7.1		3,991,584	
Q3-99	1188.2		0.1		8.7		5,219,207	
Q4-99	976.3		0.02		6.9		6,366,935	
		4,017		0.22		31		19,811,247
Q1-00	1422.9		0.06		6.2		6,757,602	
Q2-00	1514.9		0.06		10.3		6,663,345	
Q3-00								
Q4-00								
		2,938		0.12		17		13,420,947
TOTAL	**9005**		**1.2**		**59**		**41,256,148**	

Olin Niagara Falls
Recovery Well Data: May, 2000

Location ID	Parameter Name	Result	Qualifier	Detection Limit	Sample Date	Sample Type	Units	Total
RW-5	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	84		5	5/18/2000	Duplicate	UG/L	
RW-5	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	5.7		5	5/18/2000	Duplicate	UG/L	
RW-5	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	14		5	5/18/2000	Duplicate	UG/L	**103.7**
RW-1	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	32		2.5	5/18/2000	Normal	UG/L	
RW-1	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	6.9		2.5	5/18/2000	Normal	UG/L	
RW-1	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	0	ND	2.5	5/18/2000	Normal	UG/L	
RW-1	GAMMA BHC (LINDANE)	3.3		2.5	5/18/2000	Normal	UG/L	**42.2**
RW-2	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	86		5	5/18/2000	Normal	UG/L	
RW-2	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	7		5	5/18/2000	Normal	UG/L	
RW-2	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	13		5	5/18/2000	Normal	UG/L	
RW-2	GAMMA BHC (LINDANE)	71		5	5/18/2000	Normal	UG/L	**177**
RW-3	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	46		5	5/18/2000	Normal	UG/L	
RW-3	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	0	ND	5	5/18/2000	Normal	UG/L	
RW-3	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	8.2		5	5/18/2000	Normal	UG/L	
RW-3	GAMMA BHC (LINDANE)	42		5	5/18/2000	Normal	UG/L	**96.2**
RW-4	ALDRIN	0	ND		5/18/2000	Normal	UG/L	
RW-4	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	160		5	5/18/2000	Normal	UG/L	
RW-4	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	8		5	5/18/2000	Normal	UG/L	
RW-4	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	25		5	5/18/2000	Normal	UG/L	
RW-4	DIELDRIN	0	ND		5/18/2000	Normal	UG/L	
RW-4	ENDRIN	0	ND		5/18/2000	Normal	UG/L	
RW-4	GAMMA BHC (LINDANE)	130		5	5/18/2000	Normal	UG/L	
RW-4	HEPTACHLOR	0	ND		5/18/2000	Normal	UG/L	
RW-4	p,p-DDT	0	ND		5/18/2000	Normal	UG/L	**323**
RW-5	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	85		5	5/18/2000	Normal	UG/L	
RW-5	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	5.8		5	5/18/2000	Normal	UG/L	
RW-5	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	14		5	5/18/2000	Normal	UG/L	
RW-5	GAMMA BHC (LINDANE)	65		5	5/18/2000	Normal	UG/L	**169.8**
RW-5	MERCURY, DISSOLVED	0	ND	0.0002	5/18/2000	Duplicate	MG/L	
RW-1	MERCURY, DISSOLVED	0.0064		0.0002	5/18/2000	Normal	MG/L	
RW-2	MERCURY, DISSOLVED	0.00028		0.0002	5/18/2000	Normal	MG/L	
RW-3	MERCURY, DISSOLVED	0	ND	0.0002	5/18/2000	Normal	MG/L	
RW-4	MERCURY, DISSOLVED	0	ND	0.0002	5/18/2000	Normal	MG/L	
RW-5	MERCURY, DISSOLVED	0	ND	0.0002	5/18/2000	Normal	MG/L	

Olin Niagara Falls
Recovery Well Data: May, 2000

Location ID	Parameter Name	Result	Qualifier	Detection Limit	Sample Date	Sample Type	Units	Total
RW-1	MERCURY, TOTAL	0.0081		0.0002	5/18/2000	Normal	MG/L	
RW-2	MERCURY, TOTAL	0.0038		0.0002	5/18/2000	Normal	MG/L	
RW-3	MERCURY, TOTAL	0.00027		0.0002	5/18/2000	Normal	MG/L	
RW-4	MERCURY, TOTAL	0	ND	0.0002	5/18/2000	Normal	MG/L	
RW-5	MERCURY, TOTAL	0	ND	0.0002	5/18/2000	Normal	MG/L	
RW-5	1,1,1-TRICHLOROETHANE	0	ND	1500	5/18/2000	Duplicate	UG/L	
RW-5	1,1,2,2-TETRACHLOROETHANE	3100		1500	5/18/2000	Duplicate	UG/L	
RW-5	1,1,2-TRICHLOROETHANE	0	ND	1500	5/18/2000	Duplicate	UG/L	
RW-5	1,1-DICHLOROETHENE	0	ND	1500	5/18/2000	Duplicate	UG/L	
RW-5	1,2,4-TRICHLOROBENZENE	0	ND	1500	5/18/2000	Duplicate	UG/L	
RW-5	1,2-DICHLOROBENZENE	0	ND	1500	5/18/2000	Duplicate	UG/L	
RW-5	1,3-DICHLOROBENZENE	0	ND	1500	5/18/2000	Duplicate	UG/L	
RW-5	1,4-DICHLOROBENZENE	0	ND	1500	5/18/2000	Duplicate	UG/L	
RW-5	BENZENE	0	ND	1500	5/18/2000	Duplicate	UG/L	
RW-5	CARBON TETRACHLORIDE	0	ND	1500	5/18/2000	Duplicate	UG/L	
RW-5	CHLOROBENZENE	0	ND	1500	5/18/2000	Duplicate	UG/L	
RW-5	CHLOROMETHANE	0	ND	3000	5/18/2000	Duplicate	UG/L	
RW-5	cis-1,2-DICHLOROETHYLENE	4300		1500	5/18/2000	Duplicate	UG/L	
RW-5	METHYLENE CHLORIDE	0	ND	1500	5/18/2000	Duplicate	UG/L	
RW-5	TETRACHLOROETHENE (PCE)	18000		1500	5/18/2000	Duplicate	UG/L	
RW-5	trans-1,2-DICHLOROETHENE	0	ND	1500	5/18/2000	Duplicate	UG/L	
RW-5	TRICHLOROETHYLENE (TCE)	24000		1500	5/18/2000	Duplicate	UG/L	
RW-5	VINYL CHLORIDE	0	ND	3000	5/18/2000	Duplicate	UG/L	**49,400**
Effluent Stripper	1,1,1-TRICHLOROETHANE	0	ND	5	5/18/2000	Normal	UG/L	
Effluent Stripper	1,1,2,2-TETRACHLOROETHANE	740		5	5/18/2000	Normal	UG/L	
Effluent Stripper	1,1,2-TRICHLOROETHANE	0	ND	5	5/18/2000	Normal	UG/L	
Effluent Stripper	1,1-DICHLOROETHENE	0	ND	5	5/18/2000	Normal	UG/L	
Effluent Stripper	1,2,4-TRICHLOROBENZENE	53		5	5/18/2000	Normal	UG/L	
Effluent Stripper	1,2-DICHLOROBENZENE	0	ND	5	5/18/2000	Normal	UG/L	
Effluent Stripper	1,3-DICHLOROBENZENE	6.2		5	5/18/2000	Normal	UG/L	
Effluent Stripper	1,4-DICHLOROBENZENE	6.4		5	5/18/2000	Normal	UG/L	
Effluent Stripper	BENZENE	0	ND	5	5/18/2000	Normal	UG/L	
Effluent Stripper	CARBON TETRACHLORIDE	0	ND	5	5/18/2000	Normal	UG/L	
Effluent Stripper	CHLOROBENZENE	0	ND	5	5/18/2000	Normal	UG/L	

Olin Niagara Falls
Recovery Well Data: May, 2000

Location ID	Parameter Name	Result	Qualifier	Detection Limit	Sample Date	Sample Type	Units	Total
Effluent Stripper	CHLOROMETHANE	0	ND	10	5/18/2000	Normal	UG/L	
Effluent Stripper	cis-1,2-DICHLOROETHYLENE	38		5	5/18/2000	Normal	UG/L	
Effluent Stripper	METHYLENE CHLORIDE	8		5	5/18/2000	Normal	UG/L	
Effluent Stripper	TETRACHLOROETHENE (PCE)	52		5	5/18/2000	Normal	UG/L	
Effluent Stripper	trans-1,2-DICHLOROETHENE	0	ND	5	5/18/2000	Normal	UG/L	
Effluent Stripper	TRICHLOROETHYLENE (TCE)	130		5	5/18/2000	Normal	UG/L	
Effluent Stripper	VINYL CHLORIDE	0	ND	10	5/18/2000	Normal	UG/L	**1033.6**
Influent Stripper	1,1,1-TRICHLOROETHANE	0	ND	500	5/18/2000	Normal	UG/L	
Influent Stripper	1,1,2,2-TETRACHLOROETHANE	1400		500	5/18/2000	Normal	UG/L	
Influent Stripper	1,1,2-TRICHLOROETHANE	0	ND	500	5/18/2000	Normal	UG/L	
Influent Stripper	1,1-DICHLOROETHENE	0	ND	500	5/18/2000	Normal	UG/L	
Influent Stripper	1,2,4-TRICHLOROBENZENE	750		500	5/18/2000	Normal	UG/L	
Influent Stripper	1,2-DICHLOROBENZENE	0	ND	500	5/18/2000	Normal	UG/L	
Influent Stripper	1,3-DICHLOROBENZENE	0	ND	500	5/18/2000	Normal	UG/L	
Influent Stripper	1,4-DICHLOROBENZENE	0	ND	500	5/18/2000	Normal	UG/L	
Influent Stripper	BENZENE	0	ND	500	5/18/2000	Normal	UG/L	
Influent Stripper	CARBON TETRACHLORIDE	0	ND	500	5/18/2000	Normal	UG/L	
Influent Stripper	CHLOROBENZENE	0	ND	500	5/18/2000	Normal	UG/L	
Influent Stripper	CHLOROMETHANE	0	ND	1000	5/18/2000	Normal	UG/L	
Influent Stripper	cis-1,2-DICHLOROETHYLENE	1600		500	5/18/2000	Normal	UG/L	
Influent Stripper	METHYLENE CHLORIDE	0	ND	500	5/18/2000	Normal	UG/L	
Influent Stripper	TETRACHLOROETHENE (PCE)	6200		500	5/18/2000	Normal	UG/L	
Influent Stripper	trans-1,2-DICHLOROETHENE	0	ND	500	5/18/2000	Normal	UG/L	
Influent Stripper	TRICHLOROETHYLENE (TCE)	10000		500	5/18/2000	Normal	UG/L	
Influent Stripper	VINYL CHLORIDE	0	ND	1000	5/18/2000	Normal	UG/L	**19,950**
RW-1	1,1,1-TRICHLOROETHANE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-1	1,1,2,2-TETRACHLOROETHANE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-1	1,1,2-TRICHLOROETHANE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-1	1,1-DICHLOROETHENE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-1	1,2,4-TRICHLOROBENZENE	6200		1500	5/18/2000	Normal	UG/L	
RW-1	1,2-DICHLOROBENZENE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-1	1,3-DICHLOROBENZENE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-1	1,4-DICHLOROBENZENE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-1	BENZENE	0	ND	1500	5/18/2000	Normal	UG/L	

Olin Niagara Falls
Recovery Well Data: May, 2000

Location ID	Parameter Name	Result	Qualifier	Detection Limit	Sample Date	Sample Type	Units	Total
RW-1	CARBON TETRACHLORIDE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-1	CHLOROBENZENE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-1	CHLOROMETHANE	0	ND	3000	5/18/2000	Normal	UG/L	
RW-1	cis-1,2-DICHLOROETHYLENE	1900		1500	5/18/2000	Normal	UG/L	
RW-1	METHYLENE CHLORIDE	2100		1500	5/18/2000	Normal	UG/L	
RW-1	TETRACHLOROETHENE (PCE)	4400		1500	5/18/2000	Normal	UG/L	
RW-1	trans-1,2-DICHLOROETHENE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-1	TRICHLOROETHYLENE (TCE)	32000		1500	5/18/2000	Normal	UG/L	
RW-1	VINYL CHLORIDE	0	ND	3000	5/18/2000	Normal	UG/L	**46,600**
RW-2	1,1,1-TRICHLOROETHANE	0	ND	400	5/18/2000	Normal	UG/L	
RW-2	1,1,2,2-TETRACHLOROETHANE	1200		400	5/18/2000	Normal	UG/L	
RW-2	1,1,2-TRICHLOROETHANE	0	ND	400	5/18/2000	Normal	UG/L	
RW-2	1,1-DICHLOROETHENE	0	ND	400	5/18/2000	Normal	UG/L	
RW-2	1,2,4-TRICHLOROBENZENE	1500		400	5/18/2000	Normal	UG/L	
RW-2	1,2-DICHLOROBENZENE	0	ND	400	5/18/2000	Normal	UG/L	
RW-2	1,3-DICHLOROBENZENE	0	ND	400	5/18/2000	Normal	UG/L	
RW-2	1,4-DICHLOROBENZENE	0	ND	400	5/18/2000	Normal	UG/L	
RW-2	BENZENE	0	ND	400	5/18/2000	Normal	UG/L	
RW-2	CARBON TETRACHLORIDE	0	ND	400	5/18/2000	Normal	UG/L	
RW-2	CHLOROBENZENE	0	ND	400	5/18/2000	Normal	UG/L	
RW-2	CHLOROMETHANE	0	ND	800	5/18/2000	Normal	UG/L	
RW-2	cis-1,2-DICHLOROETHYLENE	1600		400	5/18/2000	Normal	UG/L	
RW-2	METHYLENE CHLORIDE	0	ND	400	5/18/2000	Normal	UG/L	
RW-2	TETRACHLOROETHENE (PCE)	6600		400	5/18/2000	Normal	UG/L	
RW-2	trans-1,2-DICHLOROETHENE	0	ND	400	5/18/2000	Normal	UG/L	
RW-2	TRICHLOROETHYLENE (TCE)	9500		400	5/18/2000	Normal	UG/L	
RW-2	VINYL CHLORIDE	0	ND	800	5/18/2000	Normal	UG/L	**20,400**
RW-3	1,1,1-TRICHLOROETHANE	0	ND	20	5/18/2000	Normal	UG/L	
RW-3	1,1,2,2-TETRACHLOROETHANE	0	ND	20	5/18/2000	Normal	UG/L	
RW-3	1,1,2-TRICHLOROETHANE	0	ND	20	5/18/2000	Normal	UG/L	
RW-3	1,1-DICHLOROETHENE	0	ND	20	5/18/2000	Normal	UG/L	
RW-3	1,2,4-TRICHLOROBENZENE	620		20	5/18/2000	Normal	UG/L	
RW-3	1,2-DICHLOROBENZENE	62		20	5/18/2000	Normal	UG/L	
RW-3	1,3-DICHLOROBENZENE	160		20	5/18/2000	Normal	UG/L	

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Location ID	Parameter Name	Result	Qualifier	Detection Limit	Sample Date	Sample Type	Units	Total
RW-3	1,4-DICHLOROBENZENE	97		20	5/18/2000	Normal	UG/L	
RW-3	BENZENE	20		20	5/18/2000	Normal	UG/L	
RW-3	CARBON TETRACHLORIDE	0	ND	20	5/18/2000	Normal	UG/L	
RW-3	CHLOROBENZENE	86		20	5/18/2000	Normal	UG/L	
RW-3	CHLOROMETHANE	0	ND	40	5/18/2000	Normal	UG/L	
RW-3	cis-1,2-DICHLOROETHYLENE	120		20	5/18/2000	Normal	UG/L	
RW-3	METHYLENE CHLORIDE	20		20	5/18/2000	Normal	UG/L	
RW-3	TETRACHLOROETHENE (PCE)	130		20	5/18/2000	Normal	UG/L	
RW-3	trans-1,2-DICHLOROETHENE	0	ND	20	5/18/2000	Normal	UG/L	
RW-3	TRICHLOROETHYLENE (TCE)	190		20	5/18/2000	Normal	UG/L	
RW-3	VINYL CHLORIDE	0	ND	40	5/18/2000	Normal	UG/L	**1,505**
RW-4	1,1,1-TRICHLOROETHANE	0	ND	710	5/18/2000	Normal	UG/L	
RW-4	1,1,2,2-TETRACHLOROETHANE	2000		710	5/18/2000	Normal	UG/L	
RW-4	1,1,2-TRICHLOROETHANE	0	ND	710	5/18/2000	Normal	UG/L	
RW-4	1,1-DICHLOROETHENE	0	ND	710	5/18/2000	Normal	UG/L	
RW-4	1,2,4-TRICHLOROBENZENE	2000		710	5/18/2000	Normal	UG/L	
RW-4	1,2-DICHLOROBENZENE	0	ND	710	5/18/2000	Normal	UG/L	
RW-4	1,3-DICHLOROBENZENE	0	ND	710	5/18/2000	Normal	UG/L	
RW-4	1,4-DICHLOROBENZENE	0	ND	710	5/18/2000	Normal	UG/L	
RW-4	BENZENE	0	ND	710	5/18/2000	Normal	UG/L	
RW-4	CARBON TETRACHLORIDE	0	ND	710	5/18/2000	Normal	UG/L	
RW-4	CHLOROBENZENE	0	ND	710	5/18/2000	Normal	UG/L	
RW-4	CHLOROMETHANE	0	ND	1400	5/18/2000	Normal	UG/L	
RW-4	cis-1,2-DICHLOROETHYLENE	2200		710	5/18/2000	Normal	UG/L	
RW-4	METHYLENE CHLORIDE	0	ND	710	5/18/2000	Normal	UG/L	
RW-4	TETRACHLOROETHENE (PCE)	10000		710	5/18/2000	Normal	UG/L	
RW-4	trans-1,2-DICHLOROETHENE	0	ND	710	5/18/2000	Normal	UG/L	
RW-4	TRICHLOROETHYLENE (TCE)	13000		710	5/18/2000	Normal	UG/L	
RW-4	VINYL CHLORIDE	0	ND	1400	5/18/2000	Normal	UG/L	**29,200**
RW-5	1,1,1-TRICHLOROETHANE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-5	1,1,2,2-TETRACHLOROETHANE	3000		1500	5/18/2000	Normal	UG/L	
RW-5	1,1,2-TRICHLOROETHANE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-5	1,1-DICHLOROETHENE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-5	1,2,4-TRICHLOROBENZENE	1900		1500	5/18/2000	Normal	UG/L	

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Location ID	Parameter Name	Result	Qualifier	Detection Limit	Sample Date	Sample Type	Units	Total
RW-5	1,2-DICHLOROBENZENE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-5	1,3-DICHLOROBENZENE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-5	1,4-DICHLOROBENZENE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-5	BENZENE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-5	CARBON TETRACHLORIDE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-5	CHLOROBENZENE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-5	CHLOROMETHANE	0	ND	3000	5/18/2000	Normal	UG/L	
RW-5	cis-1,2-DICHLOROETHYLENE	4400		1500	5/18/2000	Normal	UG/L	
RW-5	METHYLENE CHLORIDE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-5	TETRACHLOROETHENE (PCE)	19000		1500	5/18/2000	Normal	UG/L	
RW-5	trans-1,2-DICHLOROETHENE	0	ND	1500	5/18/2000	Normal	UG/L	
RW-5	TRICHLOROETHYLENE (TCE)	25000		1500	5/18/2000	Normal	UG/L	
RW-5	VINYL CHLORIDE	0	ND	3000	5/18/2000	Normal	UG/L	**53,300**
Notes:								
of chloromethane and vinyl chloride which have an Influent Detection Limit of 1000 ug/L and an Effluent Detection Limit of 10.0								
The Detection Limit for the Influent samples is 500 ug/L, while the Detection Limit for the Effluent samples is 5.0 ug/L, with the exception								