ADEQ Arizona Department of Environmental Quality
Janet Napolitano, Governor
Stephen A. Owens, ADEQ Director

MEETING MINUTES

OU #08-147

Phoenix-Goodyear Airport Area/Western Avenue Plume
Community Advisory Group (CAG) Meeting

Thursday, May 1, 2008 at 6:30 p.m.
Goodyear City Hall, Room 117
190 N. Litchfield Road
Goodyear, Arizona

DRAFT MINUTES

Members in Attendance:
David Foltz
Brenda Holland
Susan Kagan
Diane Krone
Bob Smith

ADEQ Staff in Attendance:
Chris Gamache, PGA-South Project Manager
Cathy O'Connell, PGA-North Project Manager
Bob Peeples, Hydrologist
Harry Hendler, Federal Projects Unit Manager
Linda Mariner, Community Involvement Coordinator

EPA Staff in Attendance:
Mary Aycock, PGA-North Project Manager
Jasmin Muriel, Community Involvement Coordinator

Others in Attendance:
Harry Brenton, ARCADIS
Ron Clark, Goodyear Tire & Rubber Co.
David Iwanski, City of Goodyear
Todd Struttmann, LATA
Rick Edwards, CH2M Hill
Terre Maize, TRC
Colin Barleycorn
Jim Moyer, Park Shadows Country Homes
Robin Stinnett, City of Avondale

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1. Call to Order / Introductions – Diane Krone

Ms. Diane Krone, CAG Co-chair, facilitated the meeting. CAG members and all meeting attendees introduced themselves.

2. Synopsis of the EPA sponsored D-RAT Workshop, October 2007 – Cathy O'Connell, ADEQ

Ms. O'Connell explained that the D-RAT acronym stands for Desert Remedial Action Technologies Workshop. This workshop was offered by EPA and ADEQ with a grant from EPA where local companies were invited to present new innovative cleanup technologies that would work in a desert environment. The focus was the removal of TCE, perchlorate, and chromium – all contaminants in the Phoenix-Goodyear Airport areas sites. All abstracts and proceedings of the workshop are on EPA's web site at http://www.epa.gov/OSP/drat.htm?meetID=20.

See slide presentation below

Ms. Krone asked if ADEQ got any new information from the workshop. Ms. O'Connell said that she realized that there are lots more people working on these problems than she thought, but that each site has its own specific challenges and circumstances. She is waiting for the results of the studies for many of these technologies.

Ms. Kagan asked if, after attending the workshop, Ms. O'Connell still thought that they were doing the right thing at PGA-North. Ms. O'Connell said that one of their most amazing accomplishments at this site was the installation of two new extraction systems this past year. She felt that the technology being used at PGA-North was bounding the plume and succeeding at keeping it from spreading any further.

3. Update of PGA-North Activities – Harry Brenton, ARCADIS

Mr. Brenton introduced himself and began his presentation by reporting on the site's four treatment systems and enhancements.

See slide presentation below

Mr. Smith asked what was done with all the TCE and perchlorate that is removed from the groundwater. Mr. Brenton explained that the air strippers remove the TCE from the water as a vapor and the carbon takes it out of the air. The perchlorate is removed by the ion exchange vessels and destroyed.

Ms. Holland asked whether the chemical technology approach to remove the TCE from the groundwater has been successful anywhere else. Mr. Brenton said they have done some long-term bench scale pilot tests that proved very effective in removing TCE from the water. The challenge is how to get the nano-scale iron into the aquifer to do its work. Initial tests with injecting clean water into the well proved successful, and they expect that it will work the same with the injection of the nano-scale iron at the main dry well source.

After her PGA-North Site tour this past month with Mr. Brenton, Ms. Kagan wanted to comment that she was very gratified to see the progress that has been made in the last couple of years compared to the beginning of the investigation. Ms. Aycock stated that EPA will try to offer a tour of the site on an annual basis for the CAG members to see how the site cleanup is progressing.

4. Update of PGA-South Activities – Ron Clark, Goodyear Tire & Rubber Company

Mr. Clark reviewed the current activities in progress at the site.

See slide presentation below

There were no questions for Mr. Clark.

5. Hydrogeology of the PGA-South site and sampling results of Western Avenue – Chris Gamache, ADEQ

Mr. Gamache explained that his presentation is in response to a question raised in the last meeting regarding the reported groundwater divide that separates PGA-North and PGA-South at Yuma Road. He also gave an update on the Western Avenue WQARF site.

See slide presentation below

Mr. Smith asked if it was known what the source was of the PCE in the well at Western Avenue. Mr. Gamache answered that earlier investigations couldn't pinpoint the source. Ms. Krone commented that she guessed that Western Avenue would not be making history yet as the first WQARF site to be decommissioned. Mr. Gamache agreed that further monitoring was needed.

Ms. Krone asked if the determination of where the groundwater is flowing would be important for the site north of Yuma Road. Mr. Gamache stated that it would be important to both sites to make sure they had control of each individual contamination plume.

6. City of Goodyear (City) Report – David Iwanski, Water Resources Manager
Mr. Iwanski added his own conviction about how amazing of an accomplishment it was to have two new treatment systems installed as quickly and efficiently as at the PGA-North site because of the cooperative efforts between the City, ADEQ, EPA, ARCADIS, and Crane Co. He announced that the City now has a council-approved bulk water delivery agreement with the Goodyear Tire and Rubber Company for non-potable beneficial reuse. Mr. Iwanski stated that they are also working on getting a similar agreement for the PGA-North treated water. The I-10 highway widening activities create a big water demand, and there is a terrific opportunity for the City to save water withdrawal fees by using the PGA-North treated water as well.

Mr. Iwanski spoke about the progress made on the Supplemental Environmental Project (SEP) that the City was awarded. The SEP is being financed by a $1,000,000 Brownfields grant from EPA's consent order with Crane Co. Ms. Krone asked if the City was within the required timeframe to complete the project. Mr. Iwanski explained that the City has three years to complete the project and that they were well within their schedule.

7. Call to the Public
Jim Moyer asked: Is there a significant difference in the amount of TCE being pulled out now compared to five or ten years ago?
Mr. Brenton responded that concentrations were much higher back when the system was started. Concentrations have dropped, but there is still a significant amount of TCE to clean to the 5.0 parts per billion (ppb) standard. Ms. Aycock explained that when the pump and treat system was first started it was very effective to reduce the concentrations of TCE from 22,000 ppb down to 4,000 ppb within the last few years, but getting the levels of TCE down from 4,000 ppb to less than 5 ppb is more difficult. Mr. Struttmann further explained all the complications of having to deal with two aquifers, upper and lower, that are contaminated.

Ms. Aycock introduced Jasmin Muriel as a temporary community involvement coordinator on loan from the Washington DC office. Ms. Muriel distributed her business card to the CAG members.

The CAG took a 10-minute break.

8. Acceptance and/or Changes to Minutes for the February 2, 2008 CAG Meeting
Ms. Krone asked if anyone had any changes to the minutes. Ms. Krone and Ms. Kagan pointed out some typographical errors that needed to be corrected. Mr. Foltz then made a motion to accept the minutes as corrected, and Ms. Holland seconded. The minutes were accepted.

9. Discussion and vote on New Co-Chairs
Ms. Holland made a motion to accept the nomination of Susan Kagan and Diane Krone to be CAG co-chairs for the next term. Mr. Foltz seconded the motion, and the vote was unanimous to accept both co-chairs. Ms. Mariner announced the CAB/CAG Co-Chair Workshop coming up on May 7th. Ms. Krone already had to decline the invitation due to a previous family commitment. Ms. Kagan had to decline as well because she would be out of town. No other CAG members were able to go in their place.

10. Next Meeting Date and Agenda Discussion
The next meeting date was set for August 7, 2008 at the same location. Suggested agenda items for the next meeting included a timeframe on demolition of buildings at the PGA-North site, an update on PGA-North activities, an update on PGA-South treatment system, and the City of Goodyear report, and possibly a presentation regarding the Luke AFB water wells that may affect the PGA plumes and wells. For the last CAG meeting of the year (November 6th), Mr. Iwanski volunteered to reserve a conference room in the City's new Water Resources Administration Building and arrange a tour of the facility.

11. Adjournment
Ms. Kagan motioned to adjourn the meeting, and Mr. Smith seconded the motion. The CAG voted to adjourn until the August meeting.

Phoenix-Goodyear Airport-South Project Site Status Report

Community Advisory Group

Meeting May 1, 2008

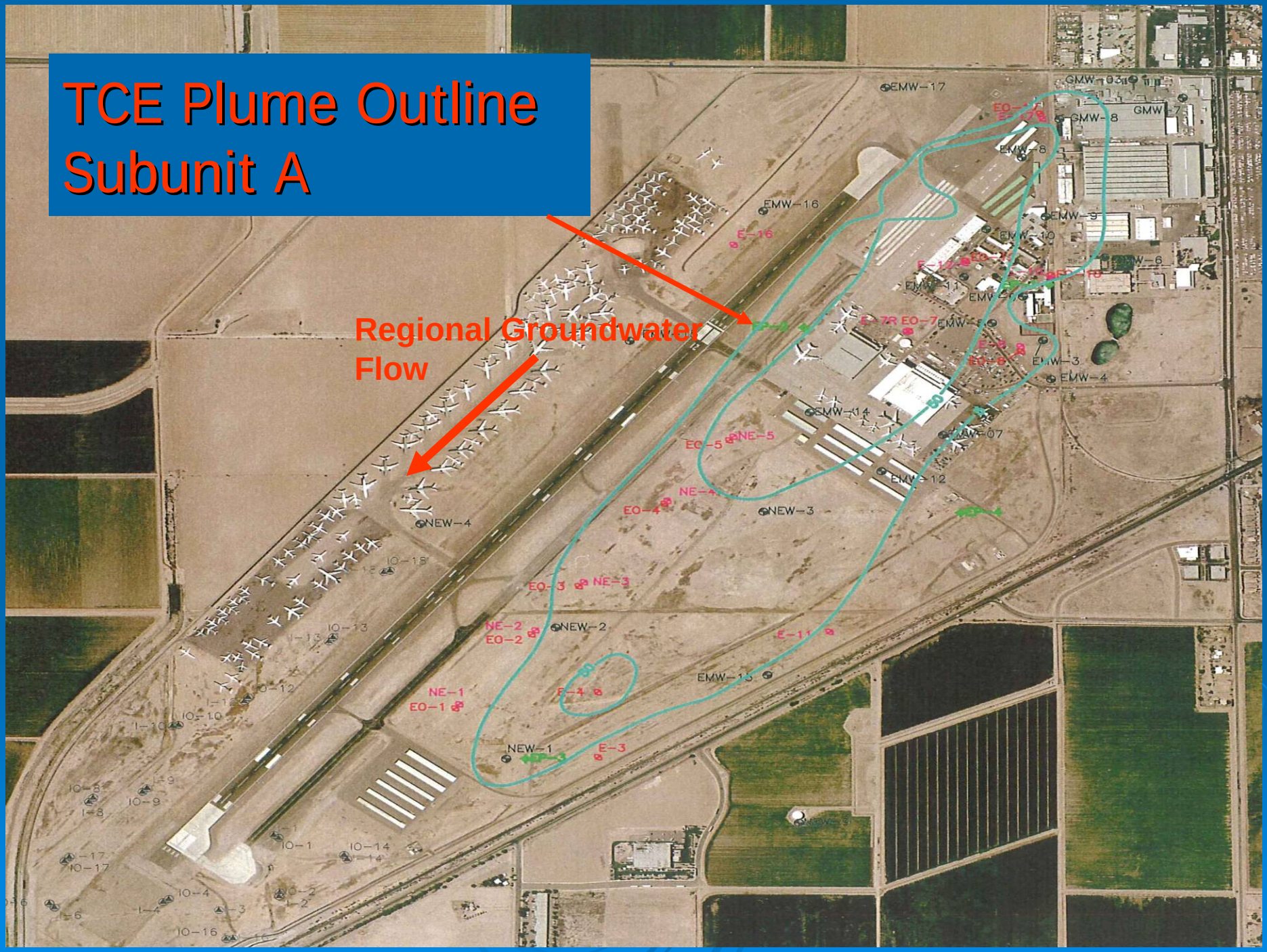
Agenda

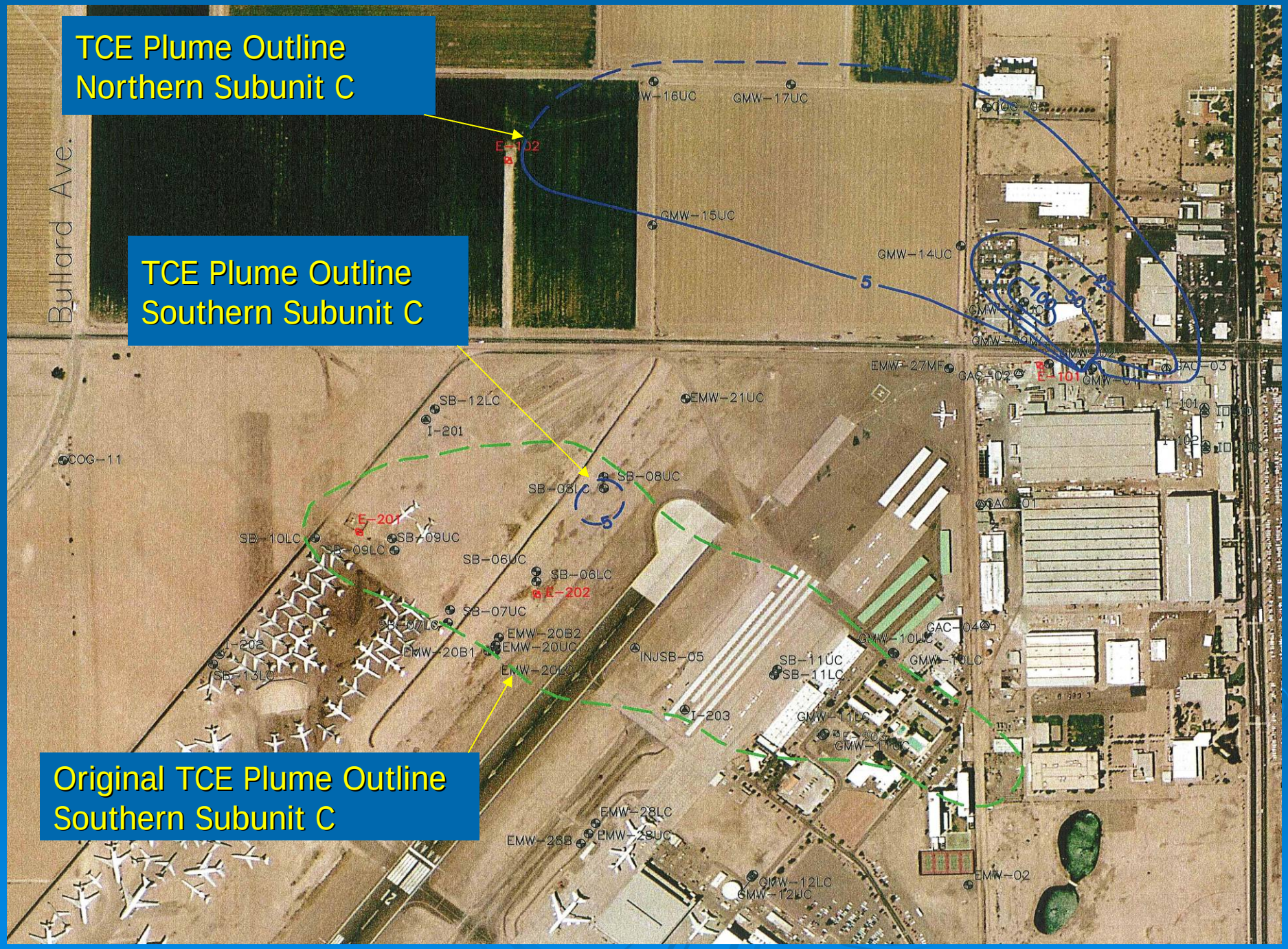
- Review current activities
- Update status of ongoing cleanup
- Upcoming activities

Review of Current Activities

- CAG #4 Back on line April 29, 2008
- Confirmation sampling of former Chromium drying beds and screening level ecological risk assessment sampling ongoing
- Vapor Intrusion Study Work Plan to regulators April 30, 2008
- Revised QA Project Plan submitted April 14, 2008

TCE Plume Outline Subunit A




TCE Plume Outline
Northern Subunit C
TCE Plume Outline
Southern Subunit C
Original TCE Plume Outline
Southern Subunit C
Bullard Ave.
GMW-16UC
GMW-17UC
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GMW-15UC
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SB-09LC
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SB-06LC
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EMW-20B2
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EMW-20B1
EMW-20LC
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GAC-04
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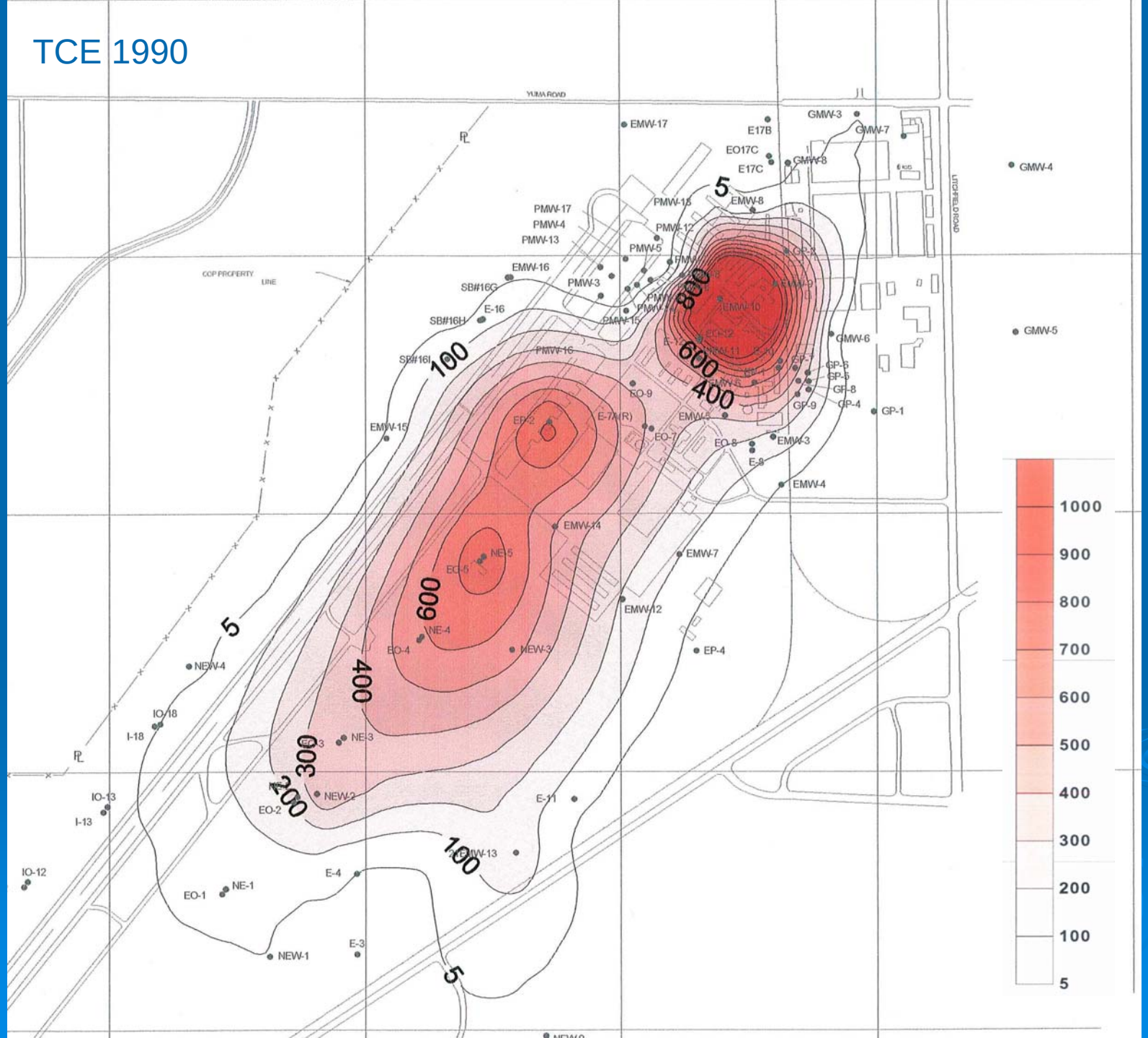
GMW-12UC
EMW-02
I-101
I-102

TCE 1990



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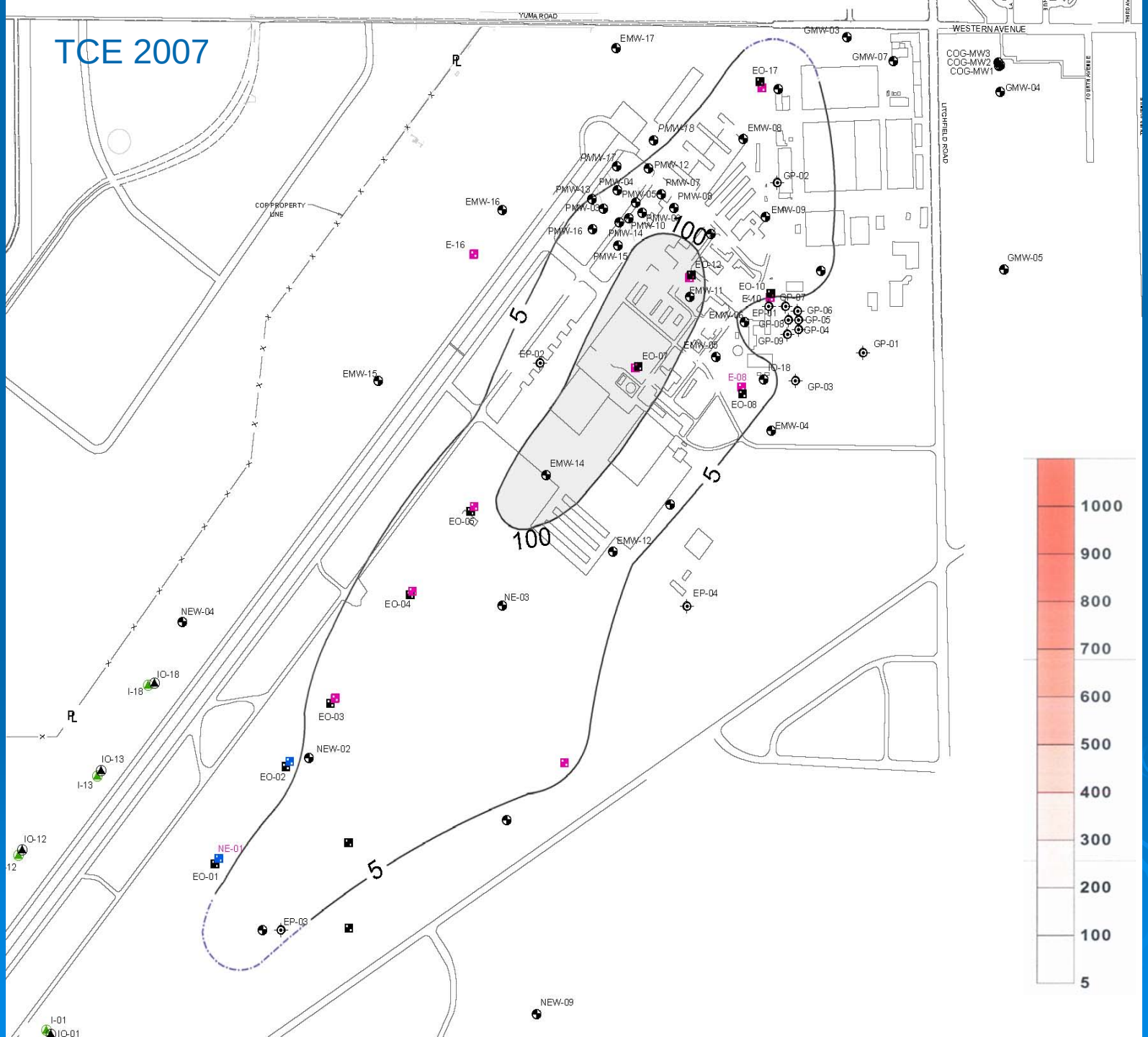
TCE 2007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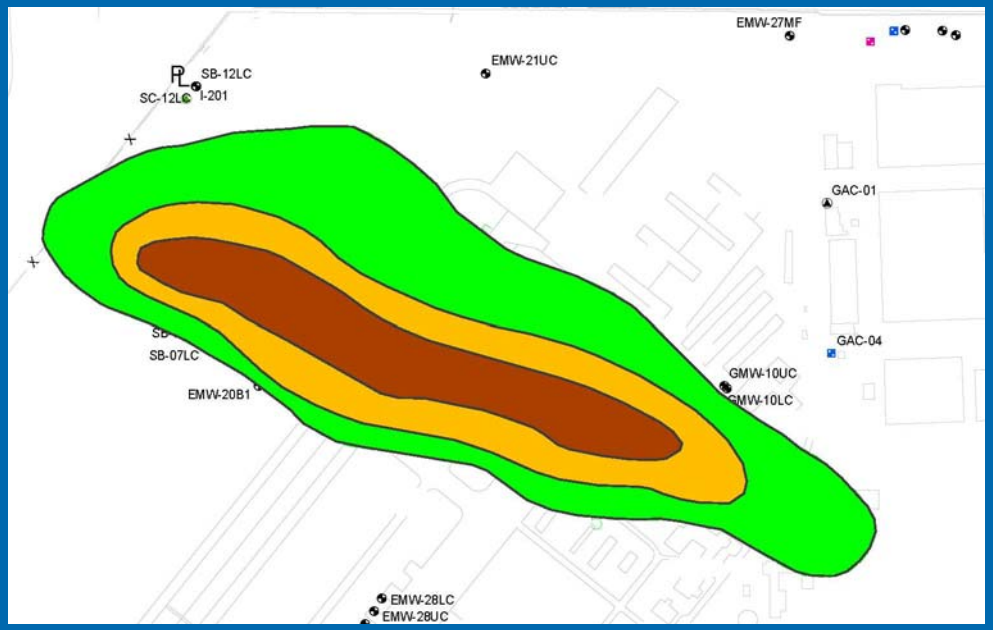
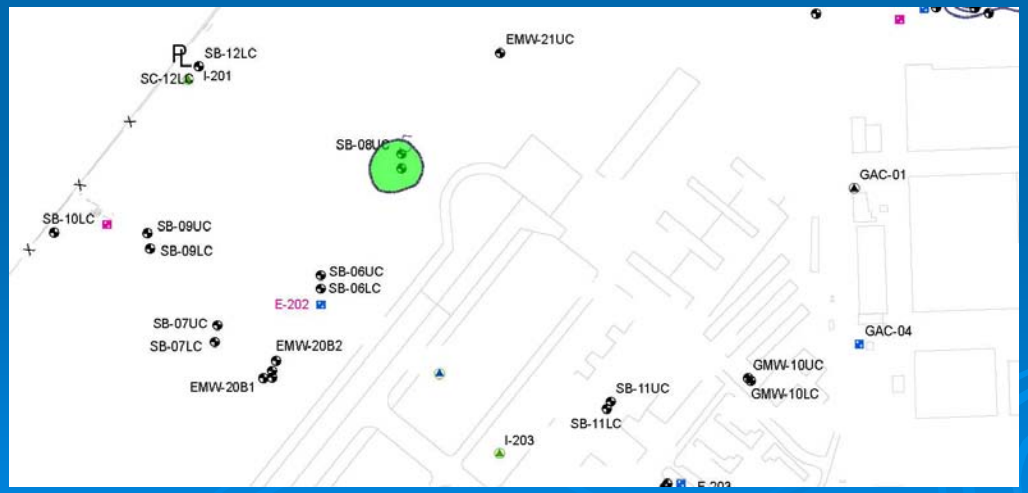
SOUTHERN PLUME

1994 TCE



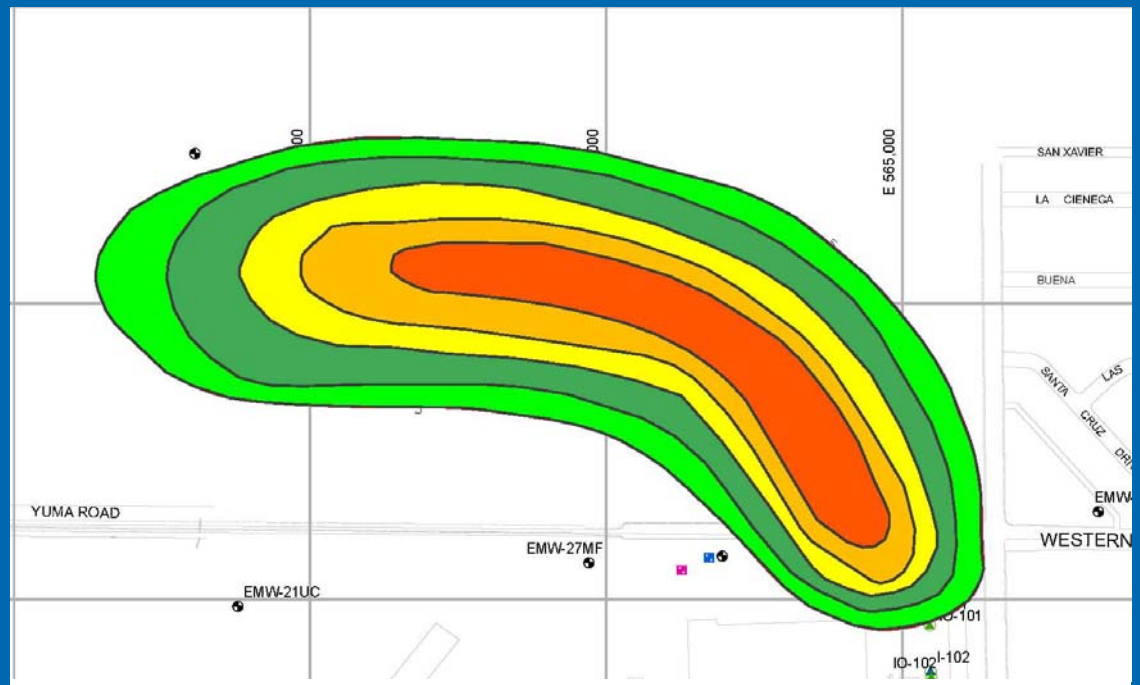
2008 TCE



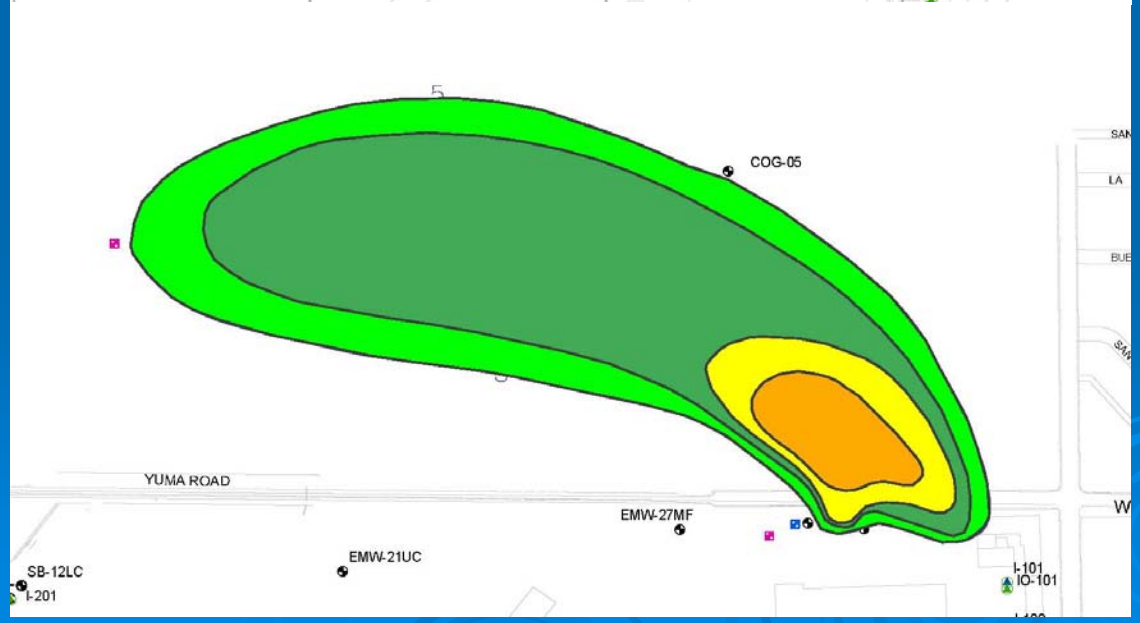
- 5ug/L
- 10ug/L
- 25ug/L
- 50ug/L
- 75ug/L
- 100ug/L

NORTHERN PLUME

1999 TCE



2008 TCE



- 5ug/L
- 10ug/L
- 25ug/L
- 50ug/L
- 75ug/L
- 100ug/L

Upcoming Plans and Reports

- Draft Focused Feasibility Study – July 2008
- Draft Screening Level Ecological Risk Assessment Report –July
- Former Chromium Sludge Drying Beds Report –July

Goodyear's Zero Waste-To-Landfill Policy

TCE Concentrations

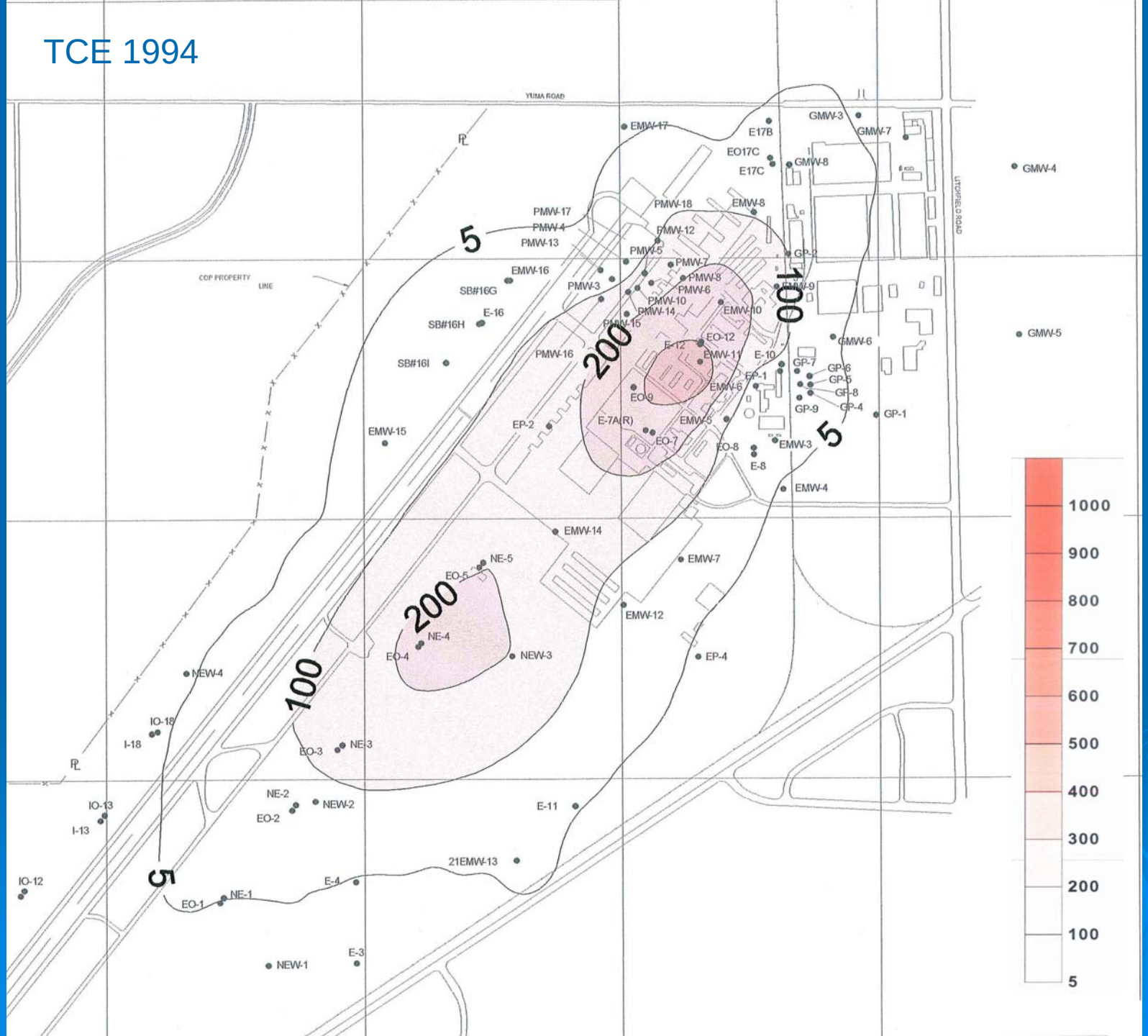
	Max TCE 1990	Max TCE 2008
Subunit A	2600 µg/L	150 µg/L
Southern Subunit C	150 µg/L	6.3 µg/L
Northern Subunit C	180 µg/L	57 µg/L

Status of On Going Cleanup

Plume	TCE Removed*	% complete
Subunit A	5,259	~87
Southern Subunit C	174	~95
Northern Subunit C	48	~29

*Mass removal through 3/31/08

TCE 1994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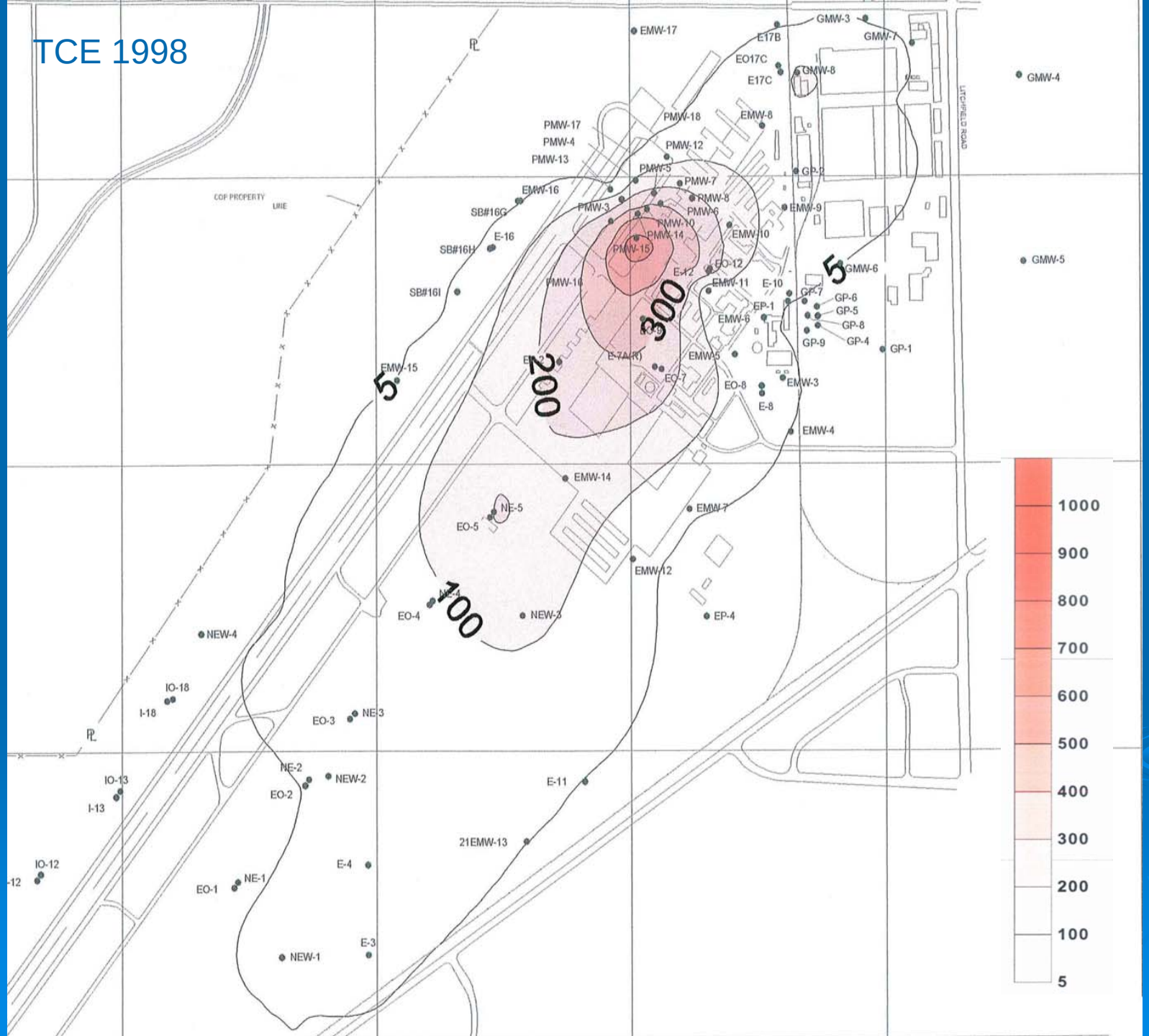
TCE 1998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Phoenix-Goodyear Airport-North (PGA-North) Superfund Site Update of Current and On-going Site Investigation & Remediation Activities

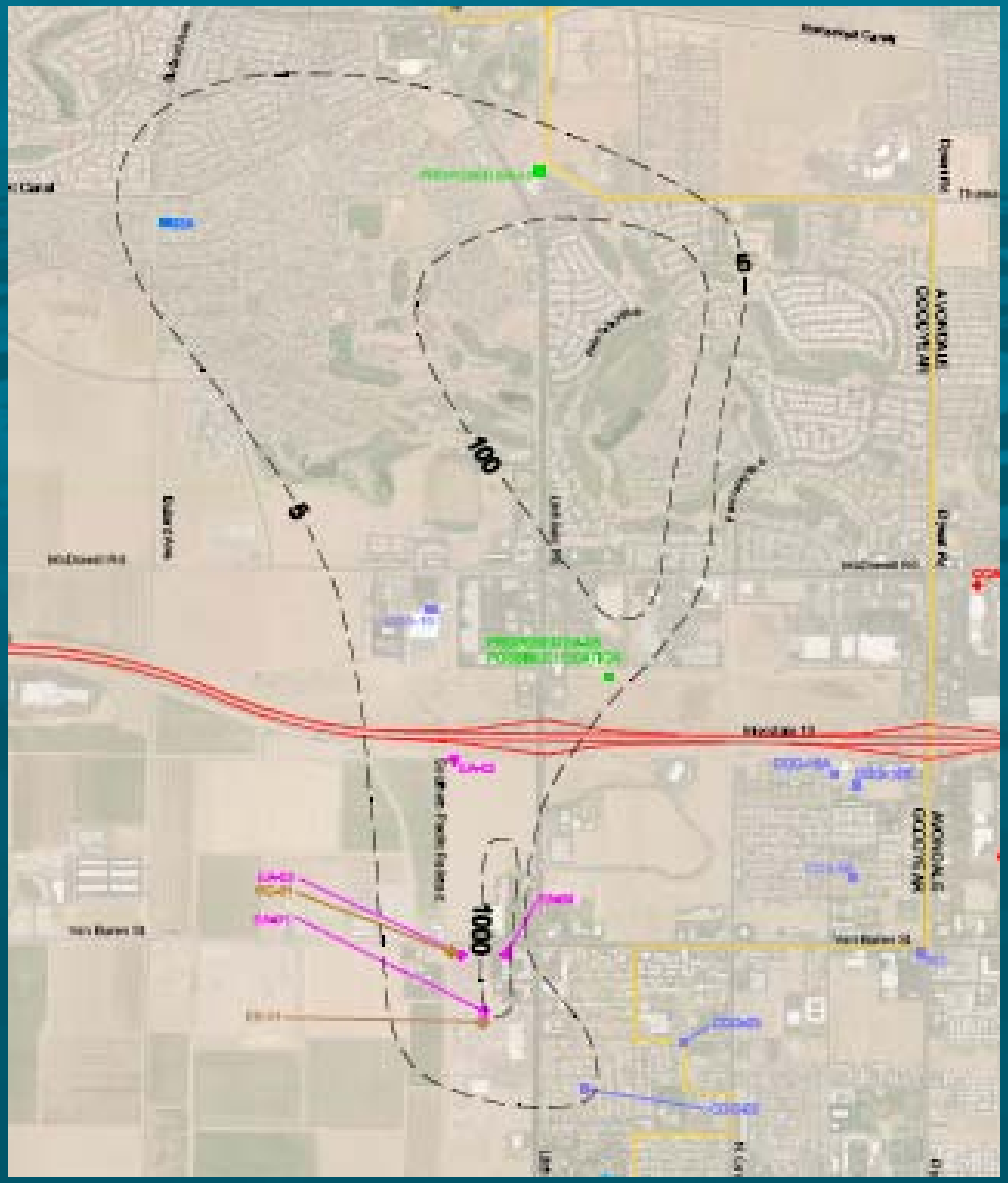
PGA-North Community Advisory Group Meeting

May 1, 2008

ARCADIS

Agenda

- Treatment Systems (GW and Soil)
- Treatment System Enhancements
- Ongoing Groundwater Investigation
- Conduit Wells
- Additional On-Site Sampling
- On-Site Treatment of Contaminants



Groundwater Treatment Systems

- Main Treatment System (MTS)
- 33A Treatment System
- EA-06 Treatment System
- EA-05 Treatment System

ARCADIS

Main Treatment System

- Six Extraction Wells
- Six Injection Wells
- Up to 455 GPM
- Operating Since 1994

Treatment System Performance

- Main Treatment System
  - Since Jan 2008
    - 50.5 Million Gallons of Groundwater Treated
    - 236 Pounds TCE Removed
    - 3.2 Pounds Perchlorate Removed
  - Totals Since Start up
    - 1.35 Billion Gallons of Groundwater Treated
    - 27,859 Pounds TCE Removed
    - 84 Pounds Total Perchlorate Removed (Since 2005)

Well 33A Treatment System

- One Extraction Well
- Up to 750 GPM
- Operating Since 1997
- Discharge to RID Canal

ARCADIS

Treatment System Performance

- Well 33A Treatment System
  - Since Jan 2008
    - 93.3 Million Gallons of Groundwater Treated
    - 62 Pounds TCE Removed
  - Totals Since Start up
    - 4.11 Billion Gallons of Groundwater Treated
    - 7,487 Pounds Total TCE Removed

New Treatment Systems

- Crane Co. proposed two Extraction Wells in Late 2006 (EA-05 and EA-06)
  - Control Expansion of TCE Plume
  - Treatment of Groundwater
- EA-06 Located at Goodyear Community Park
  - Completed December 17, 2007
- EA-05 Located SE of at Litchfield Rd and McDowell Rd
  - Completed March 31, 2008

Well EA-06 Treatment System

- One Extraction Well
- Up to 500 GPM
- Operating Since Dec 2007
- Discharge to RID Canal

ARCADIS

EA-06 Extraction System Plan View

ARCADIS

EA-06 Well Compound

ARCADIS

EA-06 Treatment System

ARCADIS

Treatment System Performance

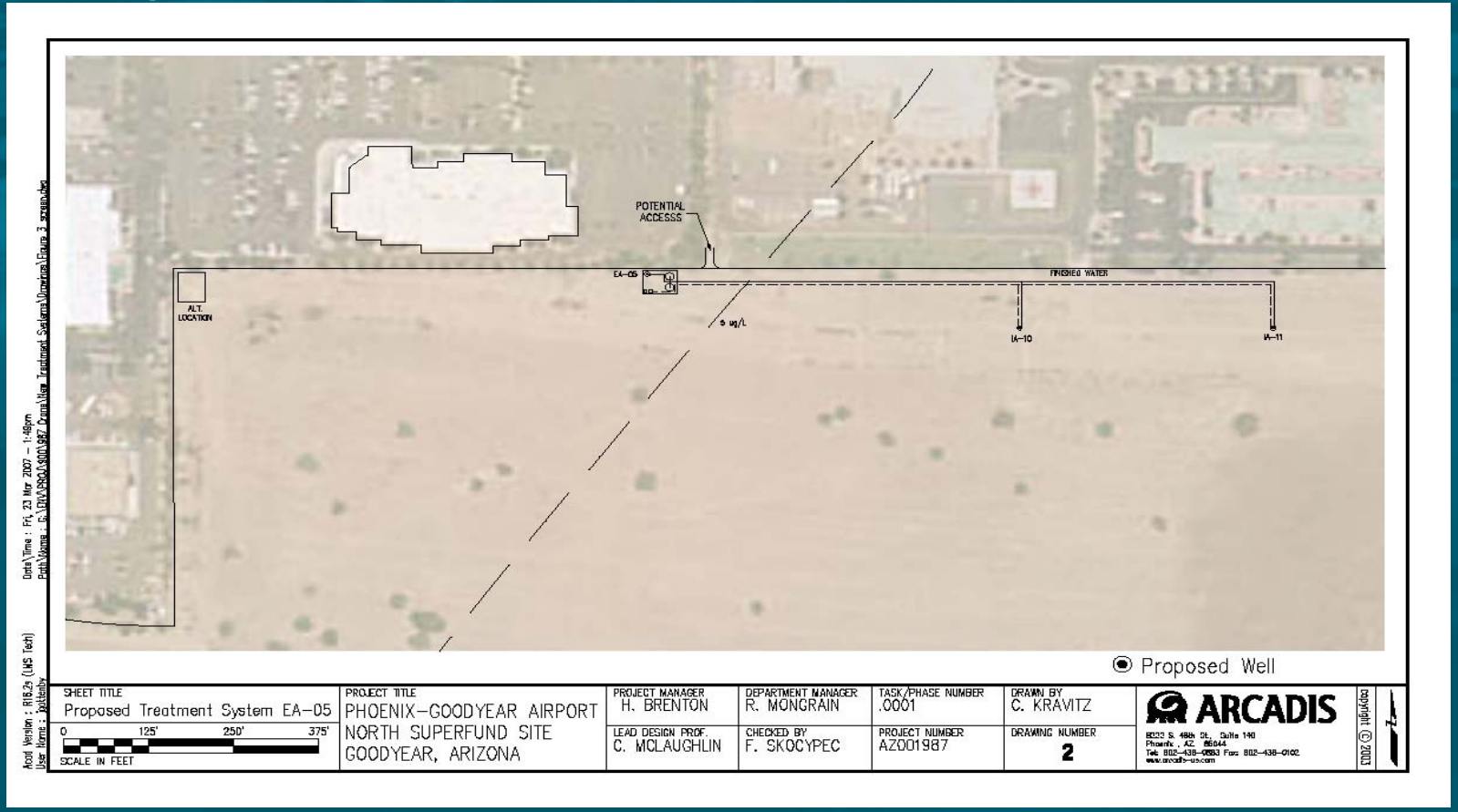
- Well EA-06 Treatment System
  - Since Start up
    - 25.1 Million Gallons of Groundwater Treated
    - 15 Pounds TCE Removed

EA-05 Groundwater Treatment System

- One Extraction Well
- One Injection Well
- Up to 500 GPM
- Completed March 31, 2008
- Operating Since April 2008
- Update of totals at next CAG

ARCADIS

EA-05 Groundwater Treatment System

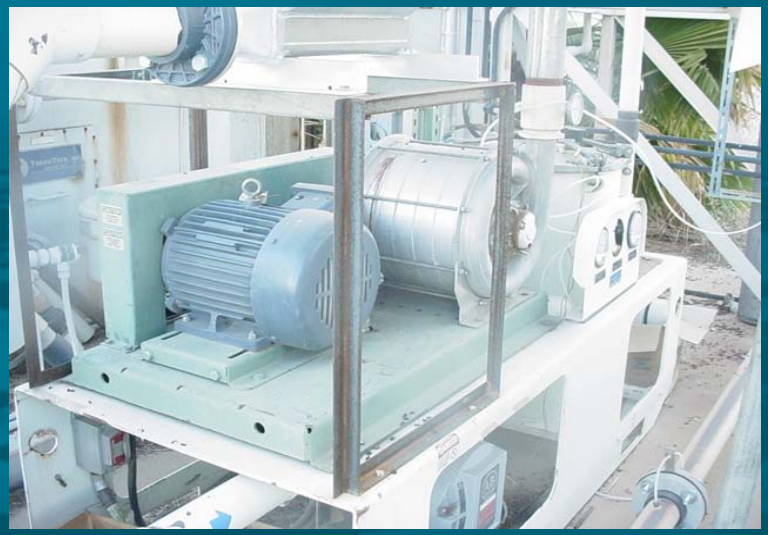


Treatment Systems

- Actions to Address Plume Expansion
  - Following Start-up of EA-05 and EA-06 Treatment Systems;
    - Collect and evaluate pumping data.
    - Collect and evaluate monitor well data.
    - Submit Construction complete reports to USEPA
    - Evaluate results & install additional monitor wells as needed.

SVE System

- On UPI Site
- Used to Remove Contaminants from Soil
- Protects Groundwater
- Installed in 1996
- Restarted in 2004
- Carbon Filters for Off-Gas
- 9 Vapor Extraction wells
- 15 Vapor Monitor wells



ARCADIS

SVE System Operation

- Mass Removal
  - 1st Quarter 2008
    - Total VOCs – 60.56 pounds
    - TCE – 33.16 pounds
  - Since April 2004 Restart
    - Total VOCs – 2,326 pounds
    - TCE – 1,361 pounds

Agenda

- Treatment Systems (GW and Soil)
- Treatment System Enhancements
- Ongoing Groundwater Investigation
- Conduit Wells
- Additional On-Site Sampling
- On-Site Treatment of Contaminants

Recent Treatment System Enhancements

- 2007 - Main Treatment System Enhancements
  - Well EA-01 increased from 60 to 90 gpm (50%)
  - Subunit C Pumping
    - Operating Two Wells EC-01 and MW-20
    - Total of 210 gpm (350% increase from 2006)
  - MTS operating at ~455 gpm, 50% increase from 2006
- 2007 - 33A Treatment System Enhancements
  - Increased pumping from 600 gpm to 750 gpm – an increase of 30%

Planned Treatment System Enhancements

- 2008-2009 - MTS Enhancements
  - Stage 1 –
    - Increase pumping in Subunit A
    - Increase MTS capacity to 595 gpm (31% increase)
    - Work Plan submitted to USEPA on April 1, 2008

Planned Treatment System Enhancements

- 2008-2009 - MTS Enhancements
  - Stage 2
    - Install new air stripper for Subunit
    - Increase pumping in Subunit A
    - Increase MTS capacity to 645 gpm (42 % increase)

Planned Treatment System Enhancements

- 2009 - MTS Enhancements
  - Stage 3
    - Install Subunit A extraction well EA-07
    - Install new injection well to south of UPI
    - Install new booster pump.
    - Increase MTS capacity to 795 gpm (75% increase)

Agenda

- Treatment Systems (GW and Soil)
- Treatment System Enhancements
- Ongoing Groundwater Investigation
- Conduit Wells
- Additional On-Site Sampling
- On-Site Treatment of Contaminants

On-Going Groundwater Investigation

- Work Completed To Date
  - Fifteen Monitor Wells Year 1 (Feb 2006 –Sep 2007)
    - According to USEPA Approved Work Plan
      - Two MAU Wells – 500+ Feet Deep
      - Five Subunit C Wells – 250+ Feet Deep
      - Eight Subunit A Wells – 150+ Feet Deep
  - Eight Monitor Wells Year 2 (Oct 2007 – April 2008)
      - Three Subunit C wells - 250+ Feet Deep
      - Five Subunit A well – 150+ Feet Deep
- Remaining Year 2 Work
    - Two Subunit A Wells
    - One Subunit C Well
    - Completed by June 2008

On Going Groundwater Investigation

ARCADIS

Agenda

- Treatment Systems (GW and Soil)
- Treatment System Enhancements
- Ongoing Groundwater Investigation
- Conduit Wells
- Additional On-Site Sampling
- On-Site Treatment of Contaminants

Conduit Wells

- Hydrophysical Investigations/Well Abandonment
- Ongoing Program to Assess Conduit Wells
- Goal to Protect Deeper Groundwater
- Completed Activities
  - Hydrophysical Investigations SunCor wells 27A and 27C
  - Abandonment of COG-04
    - Old Supply Well on UPI Site
    - Completed in December 2007

Conduit Wells

Conduit Wells

ARCADIS

Conduit Wells

- Upcoming Activities
  - Exploratory investigation around potential conduit wells S. of I-10 and W. of Litchfield Rd
  - Hydrophysical Investigation at SunCor well 34B

Agenda

- Treatment Systems (GW and Soil)
- Treatment System Enhancements
- Ongoing Groundwater Investigation
- Conduit Wells
- Additional On-Site Sampling
- On-Site Treatment of Contaminants

Additional On-Site Sampling

- Source Areas, Soils and Facility Structures Investigation - Phase I
- Goal - to determine if other contamination is present

- Phase I Work Includes:
  - Over 100 soil borings
  - Over 200 soil samples
  - Excavation of below grade structures

- USEPA Approved Work Plan
- Phase I Work - May 2007 Thru Nov 2007

Surface and Shallow Soil Investigation, Excavation Work

Sedimentation Tank Removal

ARCADIS

Surface and Shallow Soil Investigation, Excavation Work

ARCADIS

Surface and Shallow Soil Investigation, Dry Wells (Rotasonic)

ARCADIS

SASFS, Preliminary Results - Soil

249 Soil samples analyzed for 220 compounds including:

- VOCs
- SVOCs
- Metals
- Pesticides
- Herbicides
- Explosives
- Radioactive Materials
- Nitrate
- Perchlorate
- PCBs

5 Compounds Exceed Regulatory Limits:

- TCE (VOC) – one occurrence (ST-09)
- PCE (VOC) – one occurrence (ST-09)
- Lead (metal) – one occurrence (ST-09)
- Arsenic (metal) – naturally occurring concentrations
- Dieldrin (pesticide) – one occurrence

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SASFS, Preliminary Results - GW

22 Soil samples analyzed for 220 compounds including:

- VOCs
- SVOCs
- Metals
- Pesticides
- Herbicides
- Explosives
- Radioactive Materials
- Nitrate
- Perchlorate
- PCBs

5 Compounds Exceed Regulatory Limits:

- TCE (VOC) – primary COC
- Perchlorate (salt) – primary COC
- Bis(2-ethylhexyl)phthalate (SVOC) – four occurrences
- Arsenic (metal) – naturally occurring concentrations
- Selenium (metal) – two occurrences

ARCADIS

Additional On-Site Sampling

- Building Decontamination Sep 2007 thru Nov 2007
- Phase I Report and Phase II Work plan submitted January 25, 2008
  - Phase II Work to include
  - Additional soil borings and sampling
  - Investigation beneath structures
- Soil Gas Investigation
  - Investigate potential other sources of contamination
  - Work Plan to USEPA submitted on March 30, 2008

Agenda

- Treatment Systems (GW and Soil)
- Treatment System Enhancements
- Ongoing Groundwater Investigation
- Conduit Wells
- Additional On-Site Sampling
- On-Site Treatment of Contaminants

On-Site Treatment of Contaminants

- Crane Co. Evaluating In-Situ Treatment of TCE in Source Zones
- Use of nano-scale Zero Valent Iron (nZVI)
  - Chemically Reduces TCE to Non-Harmful Compounds
  - Selected for Analysis due to Rapid Treatment
  - nZVI injections are scheduled for June 2, 2008
- Crane Co. & USEPA will be evaluating other proven technologies on a case by case basis in the future.

The End

ARCADIS

PGA South Superfund Site Hydrogeology

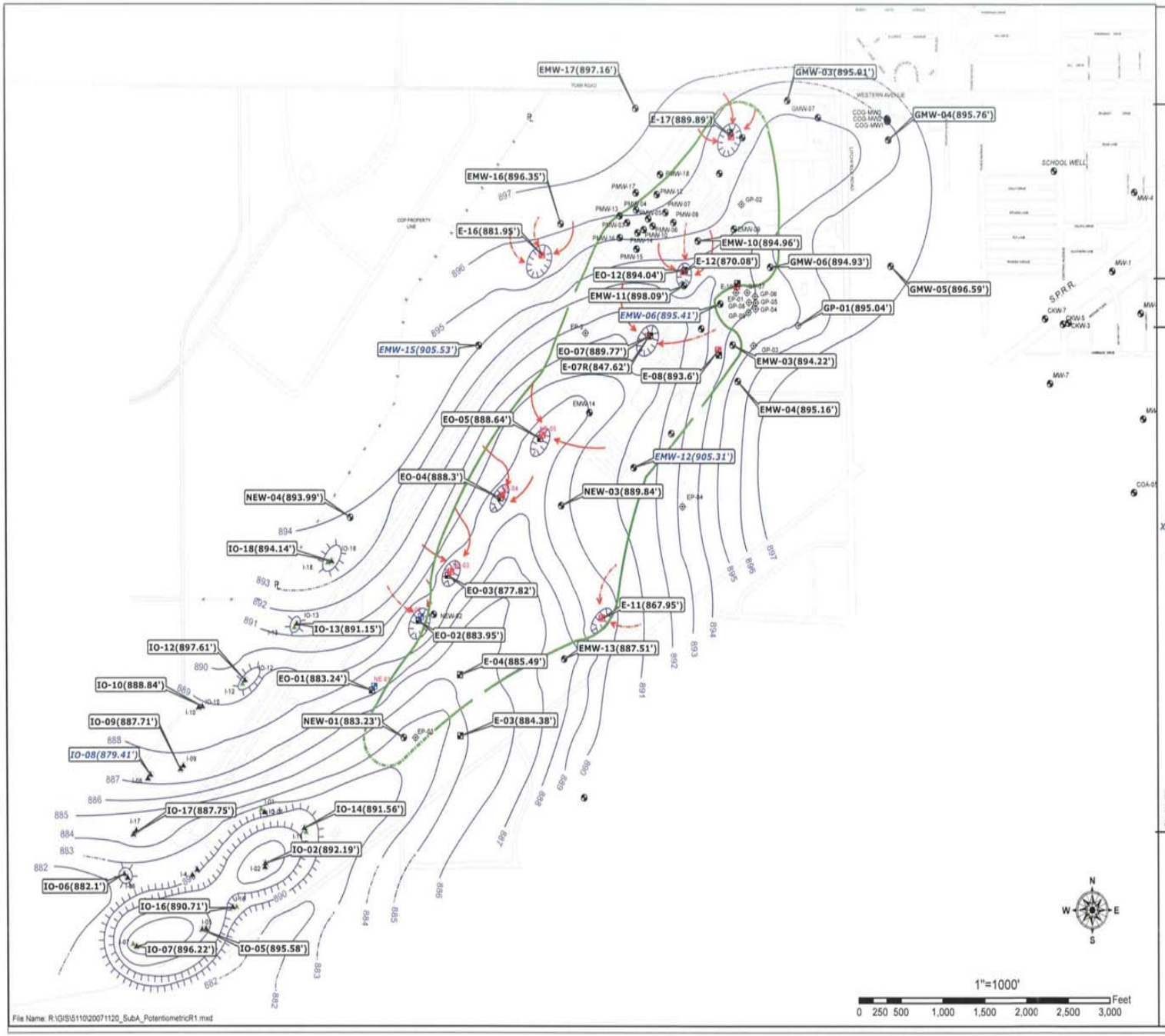
Chris Gamache, ADEQ Project Manager
Bob Peeples, ADEQ Hydrologist
Linda Mariner, ADEQ Community Involvement

Three Strategraphic Units

- Subunit A
  - Silty Sand and Gravel – Approx. 110 ft thick
- Subunit B
  - Sandy Silt with Clay – Extends 110 to 160 ft bgs.
  - Originally thought to be an aquitard
- Subunit C
  - Silt, Sand, and Gravel – Extends 160 to 310 ft bgs.

Groundwater Divide – Yuma Road

- South of Yuma Road
  - Groundwater Flows to the Southwest
- North of Yuma Road
  - Groundwater Flows to the North



5110
PHOENIX-GOODYEAR
AIRPORT SITE
GOODYEAR, ARIZONA

FIGURE 3

Potentiometric Map
Subunit A
Oct.8 - Oct.11, 2007

Date: 1/25/2008
Project Number: 10888.13

Legend

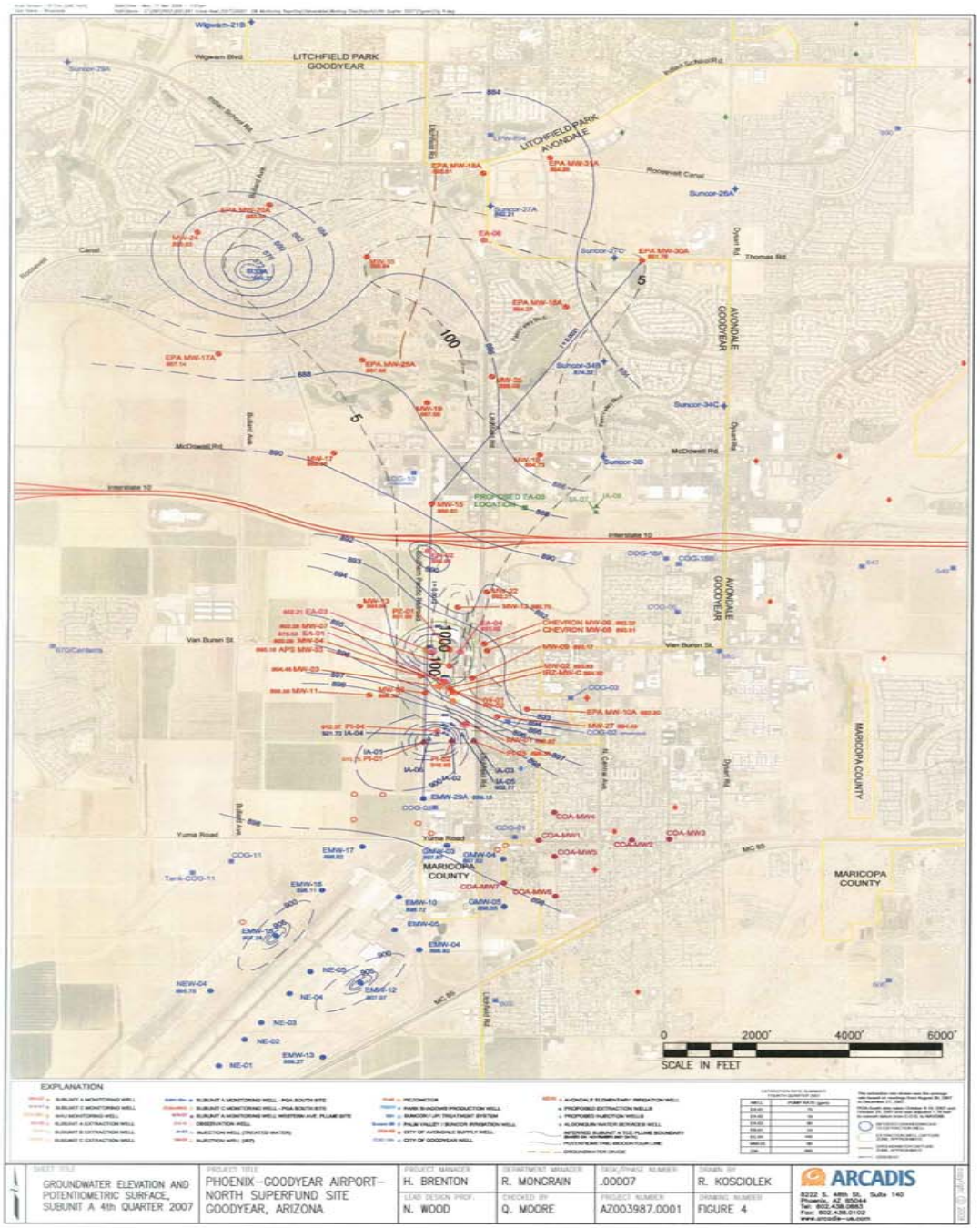
- PIEZOMETER
- ACTIVE INJECTION WELL
- INJECTION WELL
- MONITORING WELL
- EXTRACTION WELL
- ACTIVE PRODUCTION WELL
- INACTIVE PRODUCTION WELL
- POTENTIOMETRIC CONTOUR
- 4th Qtr TCE Plume
- FLOW
- XXX-XX SUSPECT WATER LEVEL NOT USED IN INTERPRETATION

AVERAGE PUMPING RATES FOR OCTOBER, 2007

WELL	AVG. RATE (gpm)
NE1	0
NE2	36
NE3	67
NE4	53
NE5	144
E7R	75
E8	0
E10	0
E11	117
E12	60
E16	92
E17	44

Note: Average October Injection Rates for I-2,I-5,I-6,I-7,I-12,I-13,I-16 and I-18 are estimated at 75 gpm

Los Alamos Technical Associates, Inc.
756 Park Meadow Road
Westerville, OH 43081
(614) 508-1200 (phone)
(614) 508-1201 (fax)
www.lataenv.com



PGA – North Subunit A

ADEQ
Arizona Department of Environmental Quality

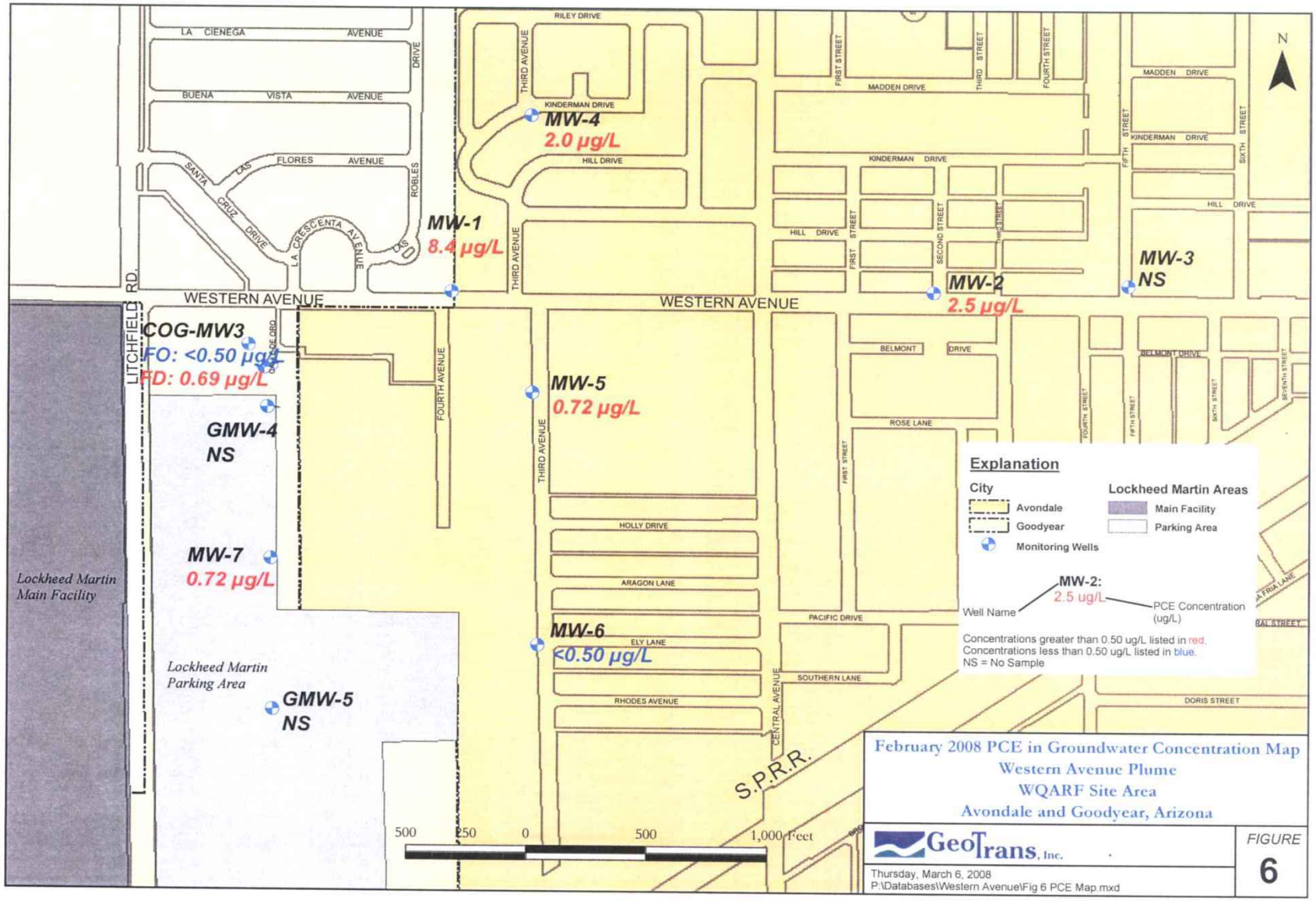
Groundwater Divide – Yuma Road

- Previously attributed to:
  - Unlined Irrigation ditch
  - City of Goodyear's Soil Aquifer Treatment facility recharge
  - Groundwater pumping from the Luke Air Force Base area to the North.
- Localized Treatment System pumping
  - Currently affects the groundwater divide

Information from Sharp and Associates Report 2005.

ADEQ
Arizona Department of Environmental Quality

Western Avenue WQARF Site


N
LA CIENEGA AVENUE
BUENA VISTA AVENUE
LAS FLORES AVENUE
SANTA CRUZ DRIVE
LA CRESCENTA AVENUE
ROBLES DRIVE
RILEY DRIVE
THIRD AVENUE
KINDERMAN DRIVE
HILL DRIVE
MADDEN DRIVE
FIRST STREET
SECOND STREET
THIRD STREET
FOURTH STREET
FIFTH STREET
SIXTH STREET
SEVENTH STREET
BELMONT DRIVE
ROSE LANE
WESTERN AVENUE
LITCHFIELD RD.
FOURTH AVENUE
HOLLY DRIVE
ARAGON LANE
ELY LANE
RHODES AVENUE
PACIFIC DRIVE
SOUTHERN LANE
CENTRAL AVENUE
DORIS STREET
S.P.R.R.
MW-1
8.4 µg/L
MW-2
2.5 µg/L
MW-3
NS
MW-4
2.0 µg/L
MW-5
0.72 µg/L
MW-6
<0.50 µg/L
MW-7
0.72 µg/L
COG-MW3
FO: <0.50 µg/L
FD: 0.69 µg/L
GMW-4
NS
GMW-5
NS
Lockheed Martin Main Facility
Lockheed Martin Parking Area
Explanation
City
Avondale
Goodyear
Monitoring Wells
Lockheed Martin Areas
Main Facility
Parking Area
MW-2:
2.5 ug/L
Well Name
PCE Concentration (ug/L)
Concentrations greater than 0.50 ug/L listed in red.
Concentrations less than 0.50 ug/L listed in blue.
NS = No Sample
500 250 0 500 1,000 Feet
February 2008 PCE in Groundwater Concentration Map
Western Avenue Plume
WQARF Site Area
Avondale and Goodyear, Arizona
GeoTrans, Inc.
Thursday, March 6, 2008
P:\Databases\Western Avenue\Fig 6 PCE Map.mxd
FIGURE
6

Desert Remedial Action Technologies (D-RAT) Workshop

DESERT
REMEDIAL ACTION TECHNOLOGIES
PHOENIX 2007

October 2 – 4, 2007
Phoenix, Arizona

D-RAT Workshop

- First EPA-sponsored workshop on successful technologies applied in desert environments
- Program emphasized field applications & case studies for TCE, perchlorate, & chromium (PGA-North & PGA-South)
- Focus on in-situ technologies
- Field trip to PGA-North

D-RAT Workshop

- Green workshop = no printed materials provided
- Abstracts available on website prior to workshop
- Presentation materials/papers only available on http://www.epa.gov/OSP/drat.htm?meetID=20
- Attendees asked to bring their own name badge

D-RAT Workshop

- Opening speaker – Alan Delaney, ADWR
- 13 Presentations
- 5 Sessions:

  Biological Technologies

  Mechanical Technologies

  Nanotechnologies

  Above Ground Treatment Alternatives

  Chromium Technologies

D-RAT Workshop

Poster Session Presentations

HOW'D THAT GET IN THERE? A Practical Approach to Determining Sources of Unexpected Contaminants or Why Geochemical Characterization is Key to Remedial Investigations
(Tiffany Downey, PhD – GeoTrans, Inc.)

In Situ and Ex Situ Perchlorate Bioremediation in Vadose Zone Contaminated Soil
(Laurie LaPat-Polasko, PhD – Geomatrix Consultants)

In-Situ Bioremediation for Treatment of Chlorinated Solvents and Perchlorate Impacted Groundwater in Desert Environments
(Ronald Johnson – Geosyntec Consultants)

Thermally Enhanced Soil Vapor Extraction to Remediate Volatile Organic Compounds
(Jay Dablow – ERM-West, Inc.)

Injectable Micro-Scale Iron for Source Treatment of Chlorinated Solvents in Deep Groundwater
(Paula Chang – ERM-West, Inc.)

Field Scale Investigation of Mass Flux Reduction as a Function of Source Zone Mass Removal for Immiscible Liquid
(Erica L. DiFilippo – University of Arizona, Department of Hydrology and Water Resources)

D-RAT Workshop

- Biological Technologies:

Pilot Test of Deep Aquifer Permanganate Treatment
David Abranovic, PE (ERM-West, Inc.)

In-Situ Bioremediation for Treatment of Chlorinated Solvents and Perchlorate Impacted Groundwater in Desert Environments
Sam Williams, PG, CHg (Geosyntec Consultants)

Evaluation of a Hydrogen Release Compound (HRC) and HRC-Primer Injection at a TCE-Impacted Site after the Operation of a Dual Phase Vacuum Extraction System
Gustavo Valdivia, PE (Bureau Veritas North America, Inc.)

D-RAT Workshop

- Mechanical Technologies:

Perchlorate, TCE, and 1,4-Dioxane Investigation and Remediation at a Rocket Propellant Facility in a Semiarid Environment
Edward (Ted) Tyler and Dave Jenkins (Kleinfelder West, Inc.)

Systematic Remedial Methodology for Chlorinated VOC Contamination of Soils and Groundwater Underlying Desert Landfills
Harold Bentley and Stewart Smith (Hydro Geo Chem, Inc.)

Combined Groundwater Remediation Strategies Using Electrical Resistance Heating (ERH)
David Fleming (Thermal Remediation Services, Inc.)

D-RAT Workshop

- Mechanical Technologies (cont'd):

Soil Vapor Extraction Pilot Test Study, Sierra Army Depot, Building 210 Area, Herlong, California

Jackie Saling, P.E. (ARCADIS, Inc.)

D-RAT Workshop

- Nanotechnologies:

Nanoscale Zero Valent Iron Bench Scale Kinetic and Phase II Injection Testing, Phoenix-Goodyear Airport North Superfund Site, Goodyear, Arizona

Robert J. Ellis, LG (ARCADIS, Inc.)

Bench-Scale and Field-Scale Evaluation of Nanoscale Iron Transport and Reactivity

Laurie LaPat-Polasko, PhD (Geomatrix Consultants, Inc.)

D-RAT Workshop

- Above Ground Treatment Technologies:

Catalytic Destruction of Gas-Phase TCE and PCE in Ground Water and Soils – Laboratory Study and Field Investigation

Song Gao, PhD (University of Arizona, Department of Atmospheric Sciences)

D-RAT Workshop

- Chromium Technologies:

Remediation of Mixed Chromium and TCE Releases

Paula Chang (ERM-West, Inc.)

In-Situ Geochemical Fixation of Chromium in Groundwater in Arid Climates: A Comparison of Chemical Reductant Technologies

Peter Storch (URS Phoenix)

Army Corps of Engineers Chromium Presentation

Waleed (Wally) Shaheen, PE (US Army Corps of Engineers) and Paul Lear (Shaw Environmental)