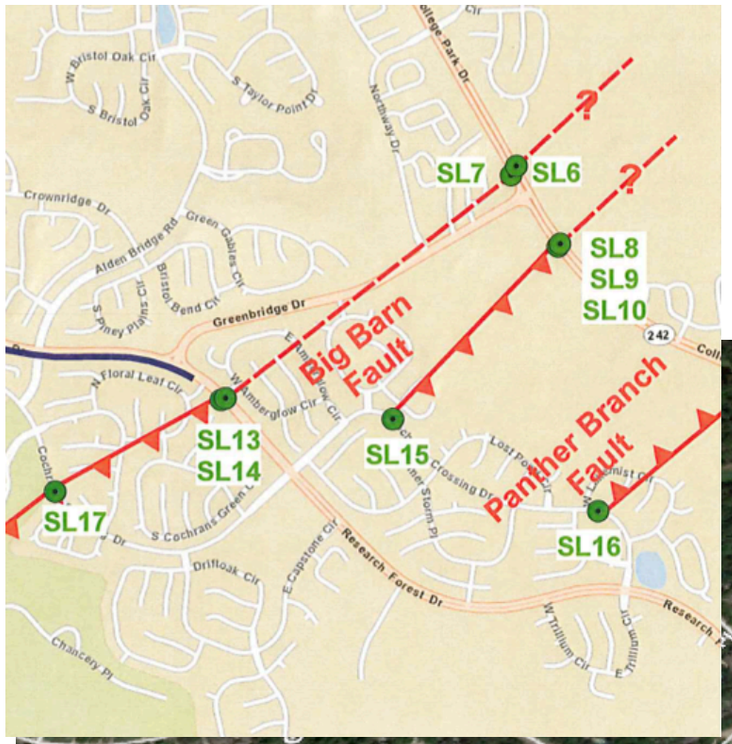
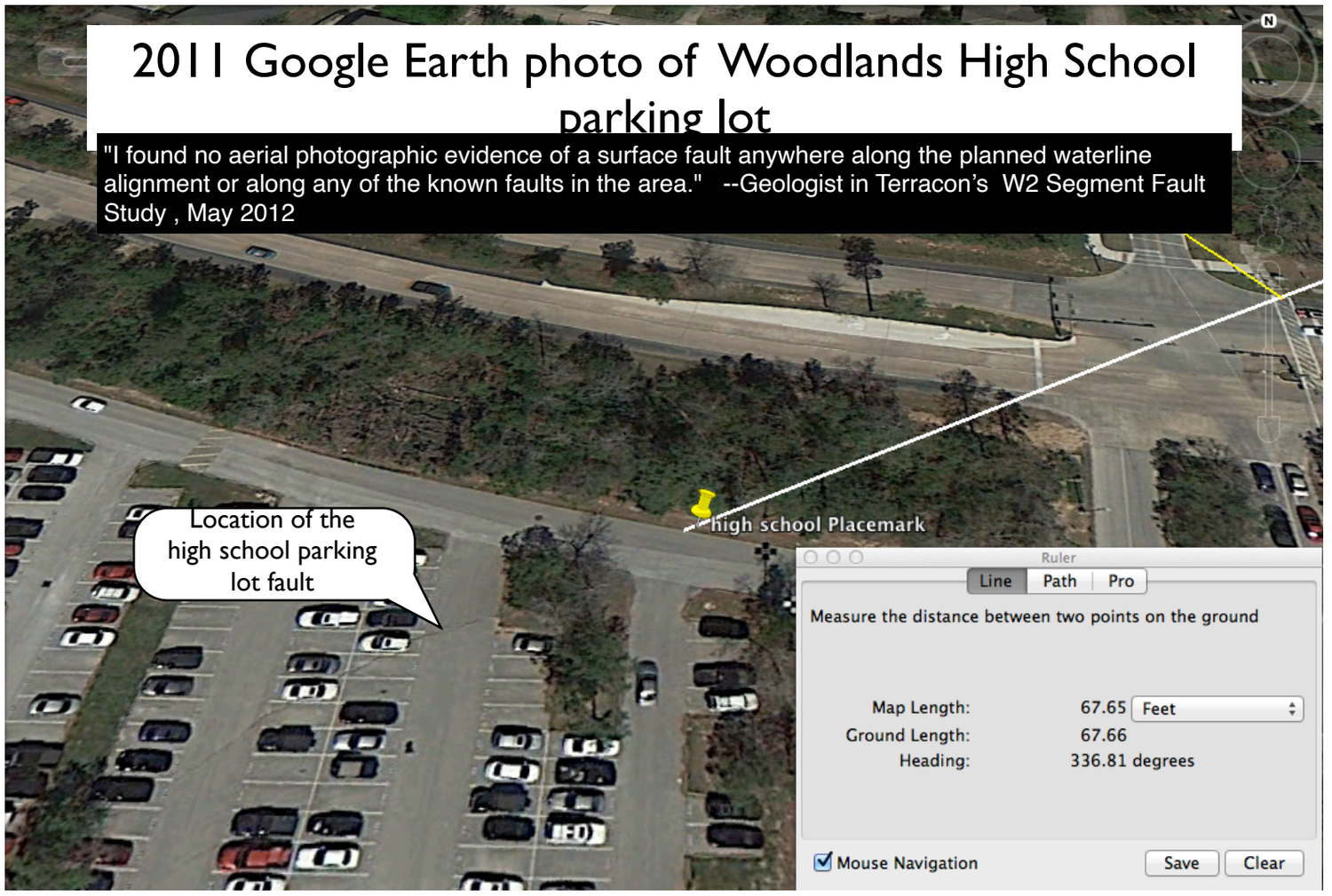
The Tour

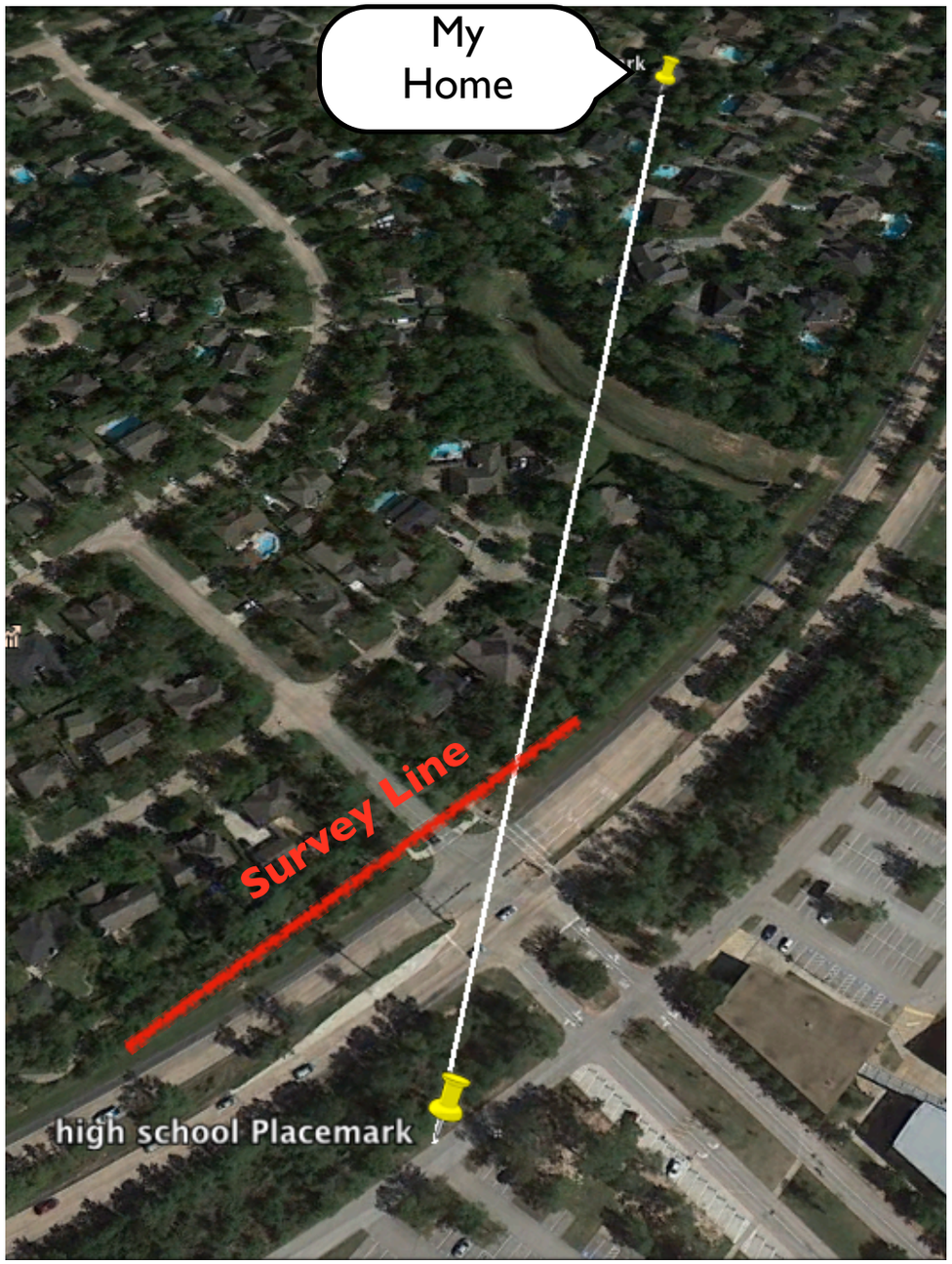
Start at PB 13
High School
PB 11
PB1
SC 16
PB 10
Back to PB 13

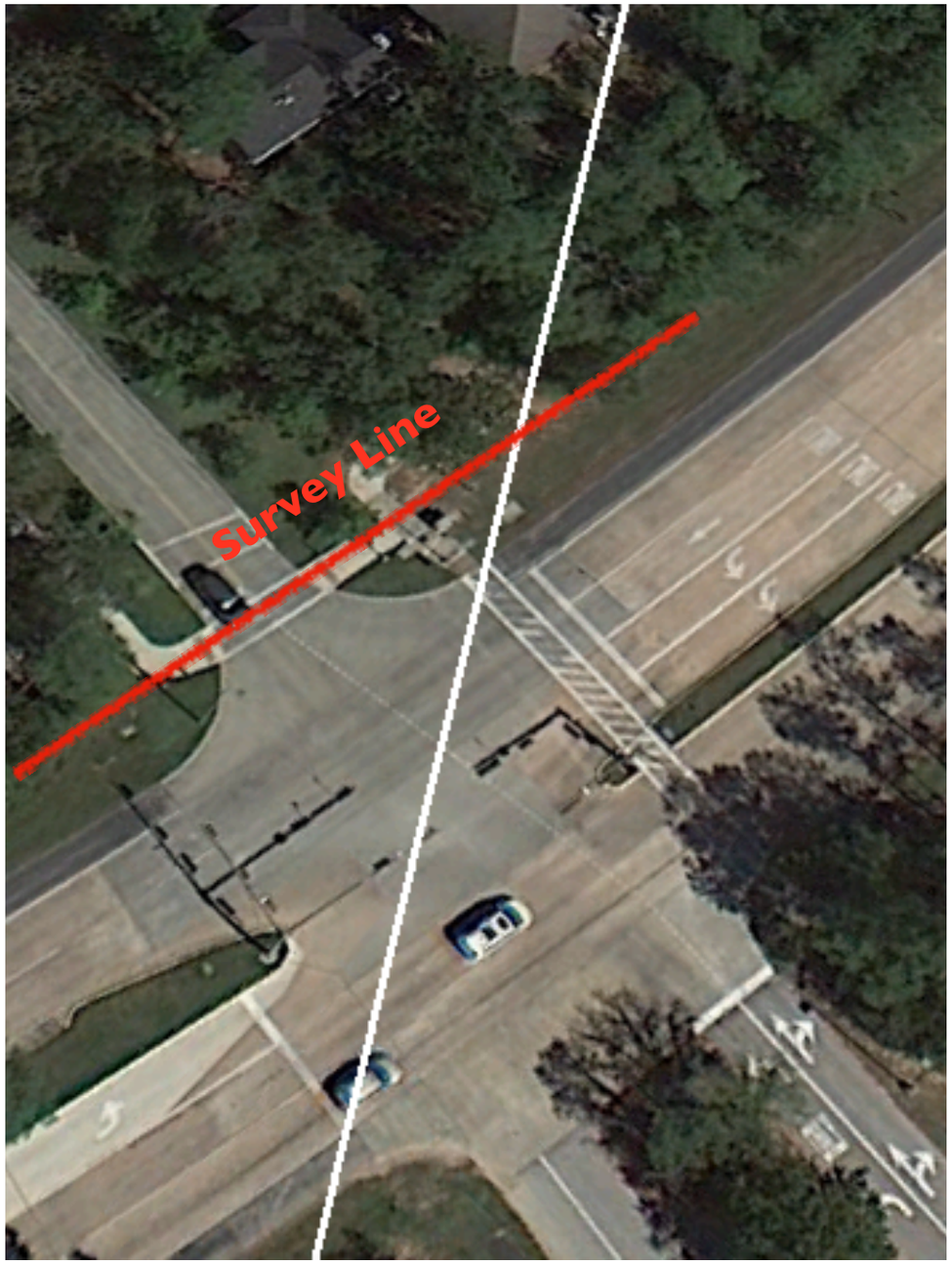


This March, 2011 photograph shows the parking lot fault clearly evident prior to Terracon's 2012 W2 Segment Fault study (and shows an alternate survey path suggested by a fault model of the PB Fault from elevation sections).



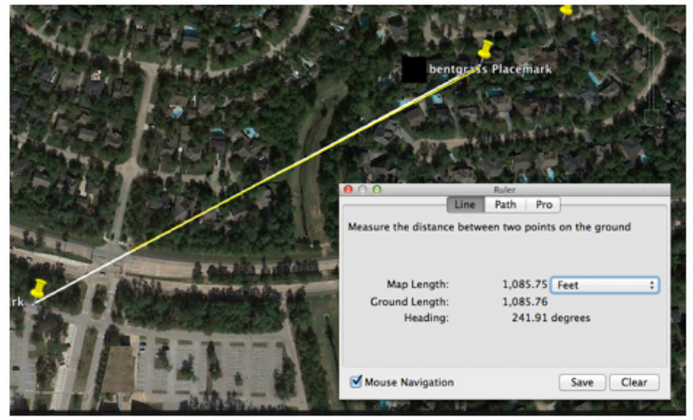
Where does Panther Branch Cross Research Forest?

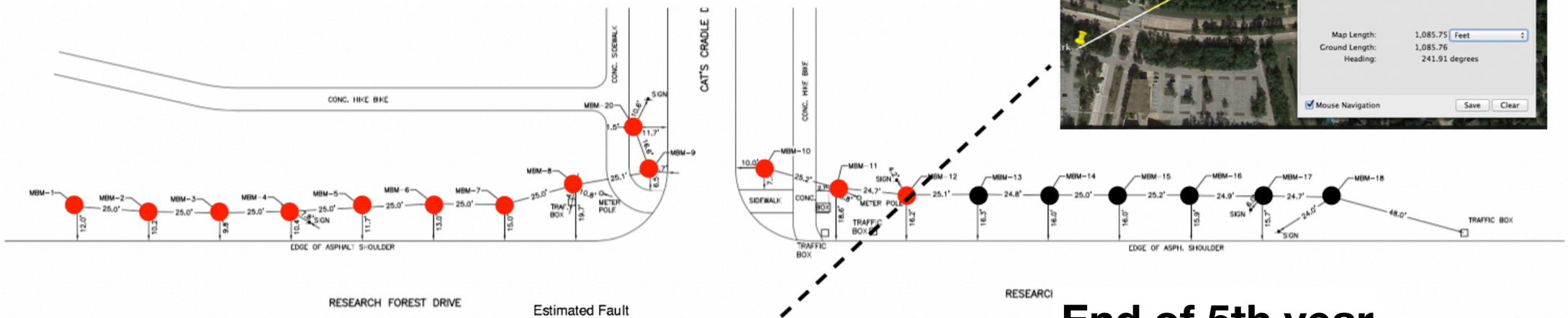


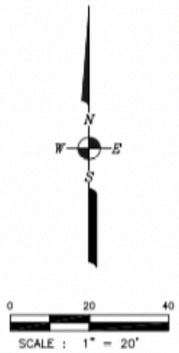


This slide shows changes in elevation of each of the 19 elevation monuments over six years along with the location of the fault that was predicted to SJRA management in August, 2013 before the GRP pipeline was placed in the ground across the Panther Branch Fault.

Location of fault line predicted in Aug 2013







Estimated Fault Line Location

1/2 way

End of 5th year

End of 6th year

Rise (.01 feet = ~ .3 cm)

No Change in elevation

Drop (.01 feet = ~ .3 cm)

MBM- MONITORING BENCHMARK
1/2 INCH IRON ROD 4 FEET LONG

"BM "W2A":
Top of Northeast Bolt on Signal Light Pole at the centerline of median on the East side of Cat's Cradle Drive and the centerline of Research Forest Drive.
Elevation = 149.35' (SJRA Project Vertical Control Datum)

Point ID	3/15	9/15	3/16	9/16	3/17	9/17	3/18	9/18	3/19	9/19	3/20	11/20	4/21
MBM1	142.59	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.03	0.03
MBM2	142.80	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
MBM3	143.31	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.03	0.02	0.03	0.04
MBM4	143.35	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.04	0.04	0.05	0.05
MBM5	143.85	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.03	0.04	0.03
MBM6	144.14	0.01	0.01	0.01	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.03
MBM7	144.29	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
MBM8	145.20	0.02	0.01	0.01	0.01	0.01	0.01	0.03	0.01	0.03	0.03	0.04	0.03
MBM20	145.86	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.03
MBM-9	145.51	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
MBM10	145.63	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03
MBM11	146.16	0.02	0.01	0.01	0.01	0.02	0.02	0.04	0.02	0.04	0.03	0.05	0.04
MBM12	145.42	0.01	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.04	0.04
MBM13	145.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
MBM14	144.99	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01
MBM15	144.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MBM16	144.78	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MBM17	144.79	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00
MBM18	144.55	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00

Reduction Plan Project
No. 5, Elevation =

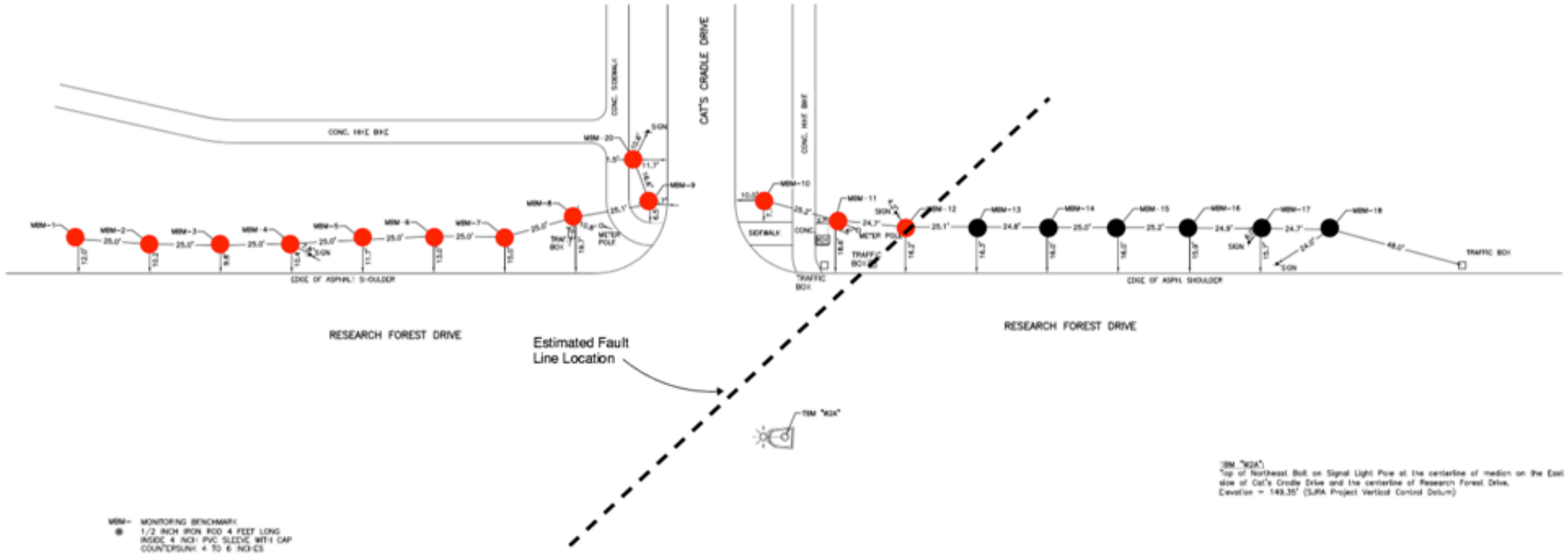
LANDTECH, INC.
Civil Engineering • Land Surveying
2525 North Loop West
Suite 300
Houston, Texas 77008
Tel. (713) 861-7088 Fax (713) 861-4131
TBPLS FIRM REGISTRATION NO. 10019100

DATE: FEBRUARY 27, 2015
SCALE: 1" = 20'
DRAWING No.: 2038-D-
JOB No.: 1420224
SHEET No. : 1 OF 1

S:\2014\1420224\CADD\W2A-MONITORING-SURVEY.DWG

AT THE HALFWAY POINT...

"I should have added…they need to exceed 0.15 feet per year"!



MBM- MONITORING BENCHMARK
● 1/2 INCH IRON ROD 4 FEET LONG INSIDE 4 INCH PVC SLEEVE WITH CAP COUNTERSUNK 4 TO 6 INCHES

TBM "W2A"
Top of Northeast Bolt on Signal Light Pole at the centerline of median on the East side of Cat's Cradle Drive and the centerline of Research Forest Drive.
Elevation = 149.35' (SJRA Project Vertical Control Datum)

NOTES:

1. All elevations are referenced to the SJRA Groundwater Reduction Plan Project Vertical Control Datum. Project Benchmark: SJRA Benchmark No. 5, Elevation = 212.00 feet.

SJRA SEGMENT W2A GEOLOGICAL MONITORING SURVEY

POINT ID	INITIAL SURVEY MARCH, 2015 ELEV.	SEPTEMBER, 2015 ELEV.	MARCH, 2016 ELEV.	SEPTEMBER, 2016 ELEV.	APRIL, 2017 ELEV.	SEPTEMBER, 2017 ELEV.	MARCH, 2018 ELEV.	SEPTEMBER, 2018 ELEV.	MARCH, 2019 ELEV.	SEPTEMBER, 2019 ELEV.	MARCH, 2020 ELEV.	
MBM-1	142.59	142.58	142.58	142.58	142.58	142.57						.02
MBM-2	142.80	142.79	142.79	142.79	142.79	142.79						.01
MBM-3	143.31	143.30	143.30	143.30	143.30	143.29						.02
MBM-4	143.35	143.34	143.33	143.33	143.33	143.33						.02
MBM-5	143.85	143.84	143.84	143.84	143.84	143.84						.01
MBM-6	144.14	144.13	144.13	144.13	144.14	144.13						.01
MBM-7	144.29	144.28	144.28	144.29	144.29	144.28						.01
MBM-8	145.20	145.18	145.19	145.19	145.19	145.19						.01
MBM-9	145.51	145.51	145.50	145.50	145.50	145.50						.01
MBM-10	145.63	145.62	145.62	145.62	145.62	145.62						.01
MBM-11	146.16	146.14	146.15	146.15	146.15	146.14						.02
MBM-12	145.42	145.41	145.42	145.41	145.42	145.41						.01
MBM-13	145.00	145.00	145.00	145.00	145.00	145.00						0.0
MBM-14	144.99	144.99	144.99	144.99	144.99	144.99						0.0
MBM-15	144.79	144.79	144.79	144.79	144.79	144.79						0.0
MBM-16	144.78	144.77	144.78	144.78	144.78	144.78						0.0
MBM-17	144.79	144.78	144.79	144.78	144.79	144.79						0.0
MBM-18	144.55	144.54	144.55	144.54	144.55	[illegible]						0.0
MBM-20	145.86	145.85	145.85	145.85	145.85	145.84						.02

RED Numbers are negative

BLACK Numbers are non-negative

$$P(X=19) = 0.00000190734863281 25$$

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SHEET No. : 1 OF 1

S:\2014\1420224\CADD\W2A-MONITORING-SURVEY.DWG

AT THE HALFWAY POINT a statement of the Criteria for establishing an active fault across Research Forest Drive is published.

CARL E. NORMAN, Ph.D.
P.G. 1772; CPG 6831

12625 MEMORIAL DRIVE #77
HOUSTON, TEXAS 77024
713-461-7420 Office; 713-410-6980 Cell
dod895@aol.com

CONSULTING GEOLOGIST

SPECIALIZING IN ACTIVE
GEOLOGIC FAULTS ON THE
GULF COASTAL PLAIN

October 19, 2017

SAN JACINTO RIVER AUTHORITY, GRP OFFICE
6627 Longmire Road, Building 1
Conroe, Texas. 77304

Attention: Mark Smith, GRP Division Director
Copy To: Lance McLeod, PE, PMP

SUBJECT: REPORT ON THE FIFTH RE-MEASURE OF WATERLINE W1A AND W2A BENCHMARK ELEVATIONS IN THE WOODLANDS, TEXAS IN SEPTEMBER 2017

The fifth re-measure shows no evidence of convincing fault movement at any of the 4 lines of benchmarks since their installation in March 2015. During that 2.5 year period, 18 of the total of 47 benchmarks show no elevation change; 1 shows a gain of +0.01 feet; 20 show a loss of -0.01 feet; 7 a loss of -0.02 feet; and 1 a loss of -0.05 feet. The -0.05 foot (0.60 inch) change occurred at the middle of a line of 20 benchmarks that crosses the Egypt Fault along the east side of FM 2978. The remaining 19 benchmarks on that line (10 on the high side of the fault, 9 on the low side) showed elevation changes of 0.00 to -0.02 feet over the pst 2.5 years. Such small changes are within the range of measurement error.

Considering only elevation changes that have taken place over the past 6 months, 32 of the 47 benchmarks showed no change; 5 showed an increase of +0.01 feet, 9 a decrease of -0.01 feet, and 1 a decrease of -0.02 feet, all of which are within the range of measurement error.

As suggested in my October 11, 2016 report on the third re-measure of the benchmarks, a fault movement event will be demonstrated when most, or all, benchmarks on one side of the fault show a consistent up or down sense of movement compared to those on the opposite side of the fault. I should have added that the rate of differential movement between the upthrown and downthrown sides of the fault should exceed approximately 0.15 feet per year.

The sixth re-measure of the benchmarks is scheduled for March 2018.

Respectfully submitted,

Carl E. Norman, Ph.D.

SJRA notes two important criteria for determining the presence of an active fault:

Criteria One. Needs to see a fault pattern.

"As suggested in my October 11, 2016 report on the third re-measure of the benchmarks, a fault movement event will be demonstrated when most, or all, benchmarks on one side of the fault show a consistent up or down sense of movement compared to those on the opposite side of the fault".

Criteria Two. The size of the elevation change is a concern.

"I should have added that the rate of differential movement between the upthrown and downthrown sides of the fault should exceed approximately 0.15 feet per year". 0.15 feet per year = 45.72 mm or 4.7 cm/year*.

*See Slide 12. This is about twice the 0.5 inch per year rate I reported to SJRA in 2013 and reported by Mike Turco for this area in 2019, before the GRP became operational. After the GRP became operational the rate of elevation decline dropped to ≤ 5mm per year.

SJRA final report on the W2A Survey

CARL E. NORMAN, PH.D.
HOUSTON, TEXAS 77024
TEXAS P.G. 1772

12625 MEMORIAL DRIVE #77
713-401-6980 Mobile
dod895@aol.com

CONSULTING GEOLOGIST

SPECIALIZING IN ACTIVE FAULTS
ON THE TEXAS-LOUISIANA
GULF COASTAL PLAIN

May 6, 2020

SAN JACINTO RIVER AUTHORITY, GRP OFFICE
11998 Pine Valley Drive
Conroe, Texas 77304

Attention: Mark Smith, GRP Division Director

SUBJECT: REPORT ON THE TENTH AND FINAL RE-MEASURE OF WATERLINE W1A AND W2A BENCHMARK ELEVATIONS IN THE WOODLANDS, TEXAS IN MARCH 2020.

All past remeasurements of the 47 W1A and W2A benchmarks show very little change in their elevations over the previous 6 months. The largest amount from September 2019 to March 2020 was only plus or minus 0.01 feet (0.12 inches) at 18 of the 47 benchmarks. The remainder showed no elevation change. The small changes are likely to be due to variations in soil moisture content at each of the 4 lines of benchmarks.

Looking at the 5-year total change in elevation of the 20 BMs crossing the Egypt Fault along FM 2978, there has been a drop of 0.10 feet (1.2 inches) of a single BM (No. 11) located near the upper edge of the downthrown fault block at the midpoint of the BM line. It is likely located in the narrow zone of highly disturbed soil between the upthrown and downthrown fault blocks. Over the same time period, 3 BMs (No. 13, 15, 19) on the downthrown block dropped -0.01 feet, and 6 others (No. 12, 14, 16 17 18 20) dropped -0.02 feet. Looking at the pattern of changes along the entire 20-BM line, no BM on either fault block has risen, while 10 have descended 0.01 feet, 8 descended 0.02 feet and only 1 shows no net movement. The only reasonable interpretation of that movement pattern is that this known active fault has, at this specific location, been inactive for the past 5 years.

This conclusion also applies to a line of 4 BMs across the same fault at a location where the fault and the BM line cross Research Forest Drive a few hundred feet east of FM 2978. Over the past 5 years, two of the 4 BMs descended 0.02 feet,

and the other two only 0.01 feet. These changes over a 5-year period are much too small to attribute to a currently active fault.

A line of 4 benchmarks along Research Forest Drive crosses the well-known Big Barn Fault just east of Green Bridge Drive. Over the past 5 years, 3 of them descended 0.01feet while the other showed no net movement. The magnitude of net differential movement of the 4 benchmarks over a 5 year period is much too small to attribute to an active fault at this location.

Farther to the east, an east-west line of 19 benchmarks along the north side of Research Forest Drive, at and near Cat's Cradle Drive, crosses an area where a northeast-southwest gap exists between 2 known active faults, both of which trend in a northeasterly direction.. Although there is no field or subsurface evidence for the existence of an active fault in the gap, the 19 benchmarks were installed near its center to identify ground movements that might be expected to occur across a known active fault.

Over the past 5 years the entire range of their vertical movements was 0.00 to -0.04 feet (-0.48 inches). Of nine benchmarks on the expected upthrown side of the possible fault, four showed no movement, two descended 0.01 feet, one descended 0.02 feet, and two descended 0.03 feet. Of the ten benchmarks on the expected downthrown side of the possible fault, one descended 0.01 feet, seven descended 0.02 feet, one descended 0.03 feet and one descended 0.4 feet.

These 19 benchmarks showed essentially the same pattern of movement every year over the past 5 years, i.e. nearly uniform distribution of elevation changes on both sides of the projected location of the possible fault. The benchmark data strongly suggest that no fault exists within the gap between the two known active faults.

Respectfully submitted,

Carl E. Norman

Carl E. Norman, Ph.D.
Consulting Geologist
TEXAS P.G. 1772

INTERA Incorporated
9600 Great Hills Trail, Suite 300W
Austin, Texas 78759 USA
512.425.2000

May 3, 2021

Aaron K. Schindewolf, P.E.
Woodlands Division Engineer
San Jacinto River Authority
2436 Sawdust Road
The Woodlands, TX 77380

RE: Review of Twelveth (12th) Re-measure of the Waterline W1A and W2A Benchmark Elevations in the Woodlands, Texas in March 2021

Dear Aaron:

This letter provides our review of a March 2021 re-measure of benchmarks placed along four lines in The Woodlands in March 2015. The work was performed under Master Professional Services Agreement Contract No. 20-0077 and under Work Order 1 – On Call Hydrogeology and Groundwater Management. The technical lead for this task was Dr. Steve Young. Our comments are provided in Attachment A.

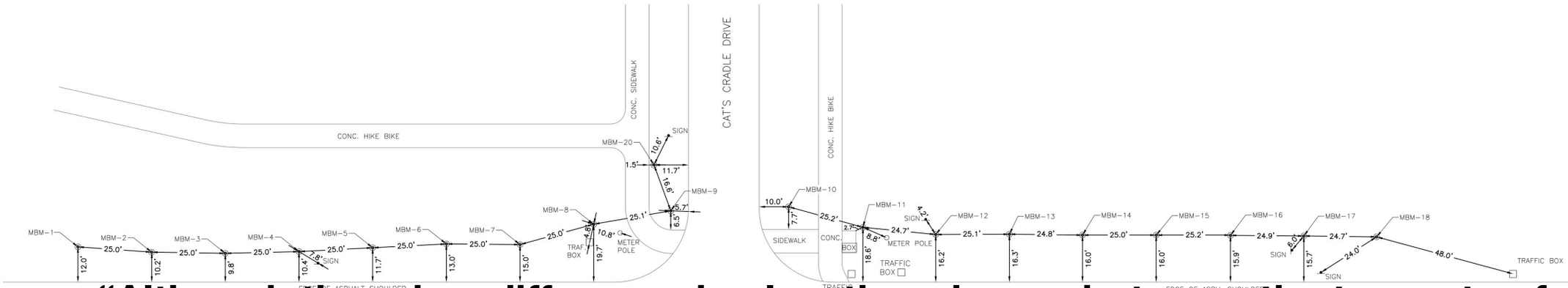
Respectfully submitted,

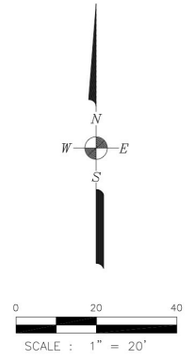
Steven C Young

Steven Young, PHD
Professional Geologist
Professional Engineer

Farther to the east, an east-west line of 19 benchmarks (see Table 4) along the north side of Research Forest Drive at and near Cat's Cradle Drive, crosses an area where a northeast-southwest gap exists between 2 known active faults or subsurface evidence for the existence of an active fault in the gap, the 19 benchmarks were installed near its center to identify ground movements that might be expected to occur across a know fault. Looking at the pattern of elevation changes at the 19 benchmarks along the transect, there is evidence that the western segment of the transect has dropped more than the eastern segment of the transect. At the western benchmarks 1 through 12, the elevation change ranged from -0.02 feet to -0.05 feet and averaged about -0.033 feet. At the eastern benchmarks 13 through 18, the elevation change ranged from -0.00 feet to -0.03 feet and averaged -0.006 feet. Although there is a difference in elevation change between the two sets of benchmarks, there is insufficient movement during the last 6 years and during the last six months to attribute the difference in elevation change to an active fault.

W2A Geological Monitoring Survey





"Although there is a difference in elevation change between the two sets of benchmarks [east vs. west], there is insufficient movement during the last six years and during the last six months to attribute the difference in elevation change to an active fault".

TBM "W2A":
Top of Northeast Bolt on Signal Light Pole at the centerline of median on the East side of Cat's Cradle Drive and the centerline of Research Forest Drive.
Elevation = 149.35' (SJRA Project Vertical Control Datum)

MBM– MONITORING BENCHMARK
◉ 1/2 INCH IRON ROD 4 FEET LONG INSIDE 4 INCH PVC SLEEVE WITH CAP COUNTERSUNK 4 TO 6 INCHES

SJRA SEGMENT W2A GEOLOGICAL MONITORING SURVEY													
POINT ID	INITIAL SURVEY MARCH, 2015 ELEV.	SEPTEMBER, 2015 ELEV.	MARCH, 2016 ELEV.	SEPTEMBER, 2016 ELEV.	APRIL, 2017 ELEV.	SEPTEMBER, 2017 ELEV.	MARCH, 2018 ELEV.	SEPTEMBER, 2018 ELEV.	MARCH, 2019 ELEV.	SEPTEMBER, 2019 ELEV.	MARCH, 2020 ELEV.	NOVEMBER, 2020 ELEV.	MARCH, 2021 ELEV.
MBM–1	142.59	142.58	142.58	142.58	142.58	142.57	142.58	142.58	142.58	142.57	142.57	142.56	142.56
MBM–2	142.80	142.79	142.79	142.79	142.79	142.79	142.79	142.79	142.79	142.78	142.79	142.78	142.78
MBM–3	143.31	143.30	143.30	143.30	143.30	143.29	143.30	143.29	143.30	143.28	143.29	143.28	143.27
MBM–4	143.35	143.34	143.33	143.33	143.33	143.33	143.33	143.32	143.33	143.31	143.31	143.30	143.30
MBM–5	143.85	143.84	143.84	143.84	143.84	143.84	143.84	143.83	143.84	143.83	143.82	143.81	143.82
MBM–6	144.14	144.13	144.13	144.13	144.14	144.13	144.13	144.12	144.13	144.12	144.12	144.11	144.11
MBM–7	144.29	144.28	144.28	144.29	144.29	144.28	144.28	144.28	144.28	144.27	144.27	144.26	144.26
MBM–8	145.20	145.18	145.19	145.19	145.19	145.19	145.19	145.17	145.19	145.17	145.17	145.16	145.17
MBM–9	145.51	145.51	145.50	145.50	145.50	145.50	145.50	145.50	145.50	145.49	145.49	145.48	145.48
MBM–10	145.63	145.62	145.62	145.62	145.62	145.62	145.62	145.61	145.61	145.61	145.60	145.60	145.60
MBM–11	146.16	146.14	146.15	146.15	146.15	146.14	146.14	146.12	146.14	146.12	146.13	146.11	146.12
MBM–12	145.42	145.41	145.42	145.41	145.42	145.41	145.41	145.40	145.41	145.39	145.40	145.38	145.38
MBM–13	145.00	145.00	145.00	145.00	145.00	145.00	145.00	145.00	145.00	145.00	145.00	144.99	145.00
MBM–14	144.99	144.99	144.99	144.99	144.99	144.99	144.99	144.98	144.99	144.98	144.98	144.98	144.98
MBM–15	144.79	144.79	144.79	144.79	144.79	144.79	144.79	144.79	144.79	144.79	144.79	144.79	144.79
MBM–16	144.78	144.77	144.78	144.78	144.78	144.78	144.78	144.78	144.78	144.78	144.78	144.78	144.78
MBM–17	144.79	144.78	144.79	144.78	144.79	144.79	144.79	144.78	144.79	144.78	144.78	144.78	144.79
MBM–18	144.55	144.54	144.55	144.54	144.55	144.55	144.55	144.54	144.55	144.54	144.55	144.54	144.55
MBM–20	145.86	145.85	145.85	145.85	145.85	145.84	145.84	145.84	145.84	145.83	145.84	145.83	145.83

NOTES:

1. All elevations are referenced to the SJRA Groundwater Reduction Plan Project Vertical Control Datum. Project Benchmark: SJRA Benchmark No. 5, Elevation = 212.00 feet.

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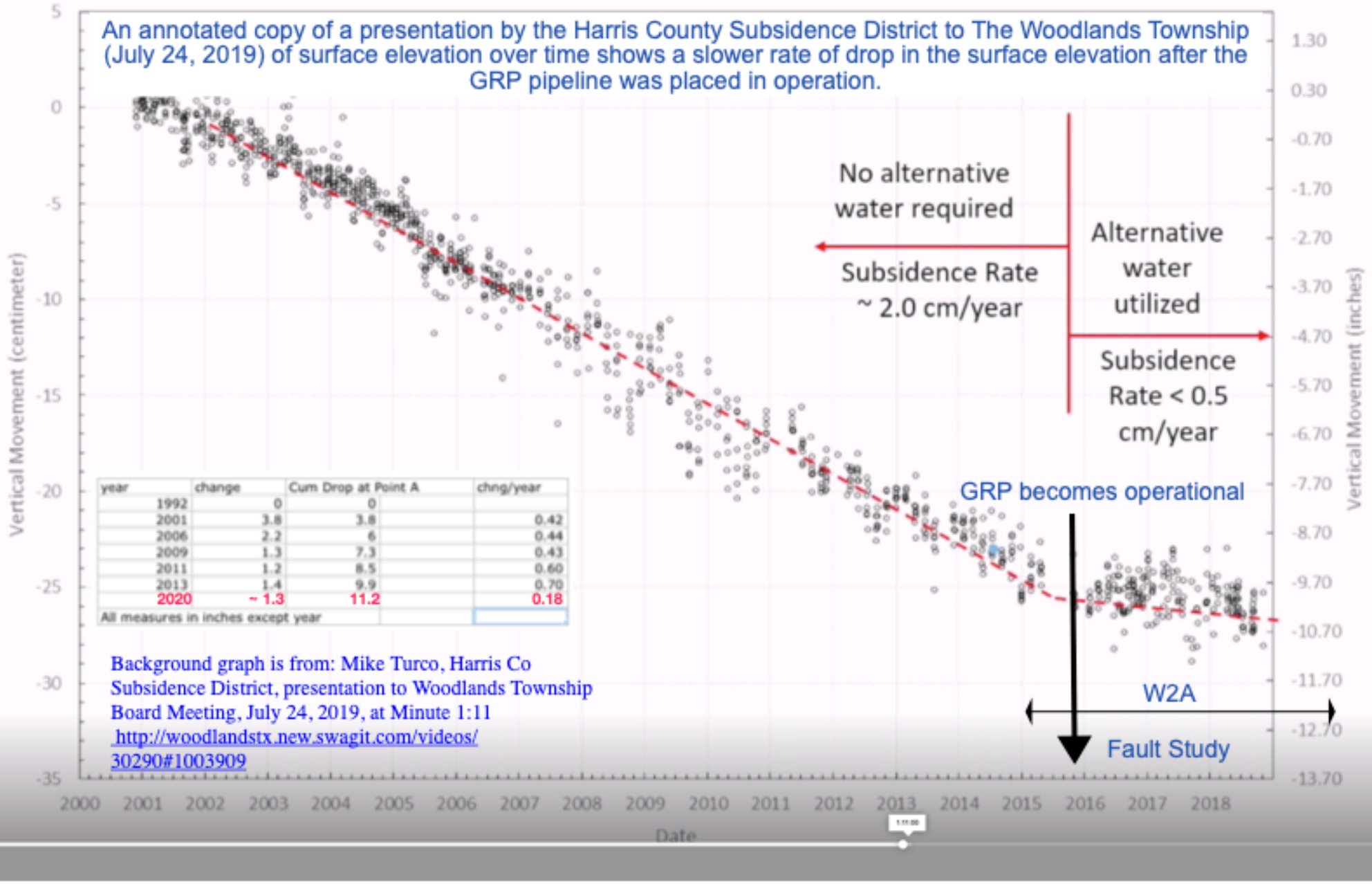
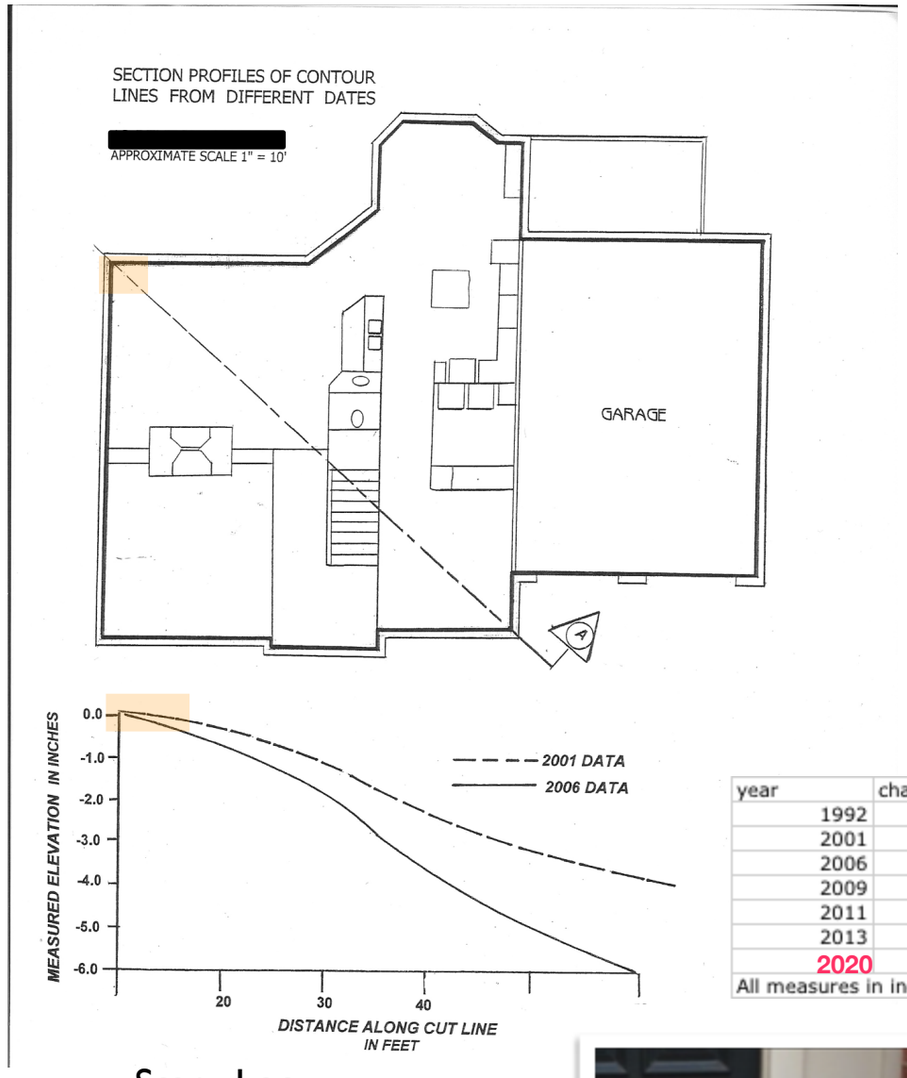
DATE: FEBRUARY 27, 2015
SCALE: 1" = 20'
DRAWING No.: 2038-D-
JOB No.: 1420224 & 2020163
SHEET No. : 1 OF 1

S:\2020\2020163\CADD\W2A-MONITORING-SUR

Slide 5

History of Subsidence at PAM-13 and at local residence before and after the GRP pipeline became operational





Scarp Loc

2013

GRP PROGRAM BENCHMARK

The contour map in relation to Scarp Location 16 and TWHS parking lot suggests that my house straddles the Panther Branch fault on a very close perpendicular diagonal line to the contour vector.

If this observation is substantiated by a qualified geologist, my foundation may provide a useful benchmark to SJRA GRP Program to measure the effectiveness of switching from ground water to surface water, post July 2014.

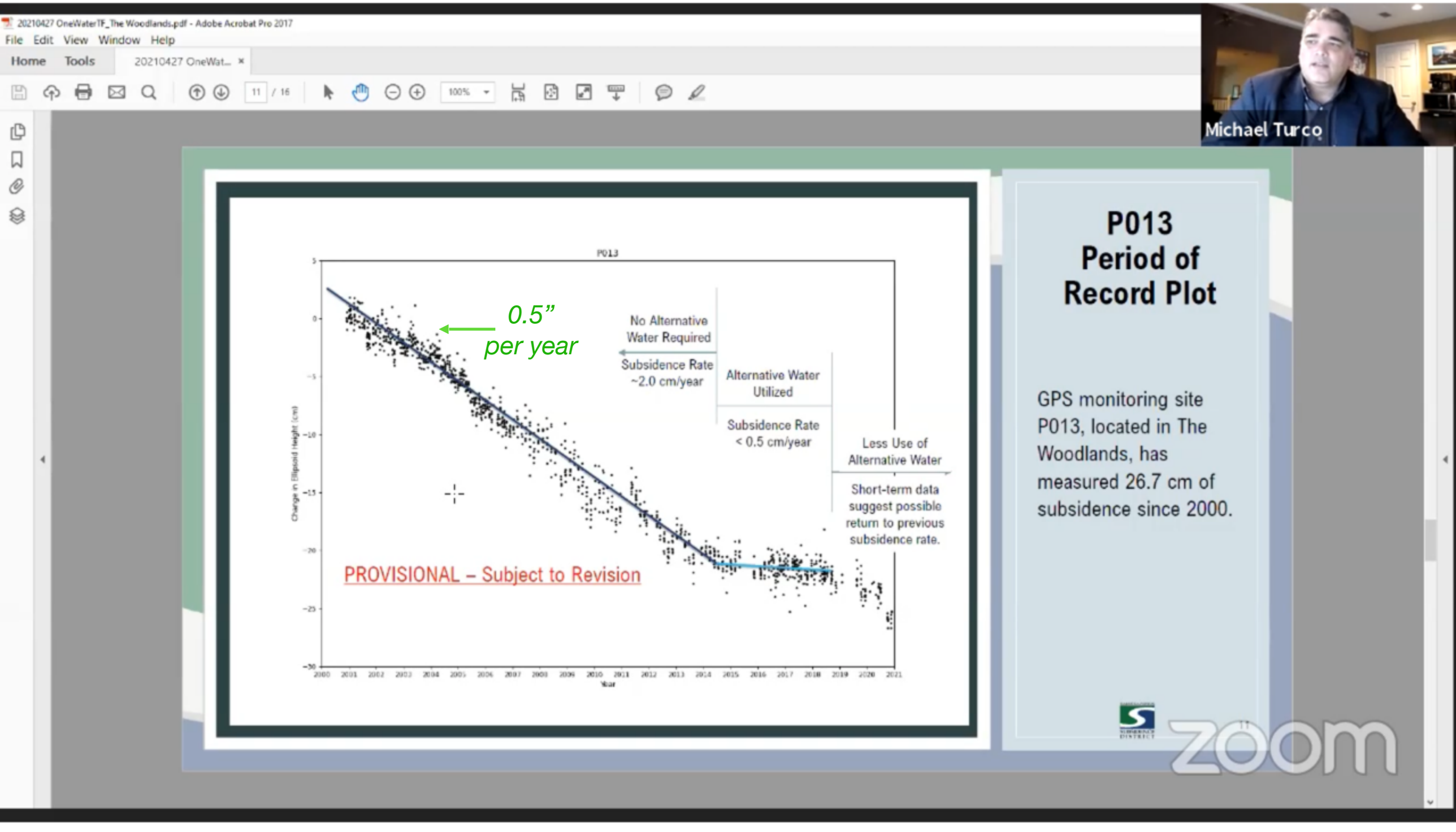
year	change	Cum Drop at Point A	chng/year
1992	0	0	
2001	3.8	3.8	0.42
2006	2.2	6	0.44
2009	1.3	7.3	0.43
2011	1.2	8.5	0.60
2013	1.4	9.9	0.70
2020	~ 1.3	11.2	0.18
All measures in inches except year			

BEFORE
~-0.5”
per year

AFTER
~- 0.5”
per 5 years

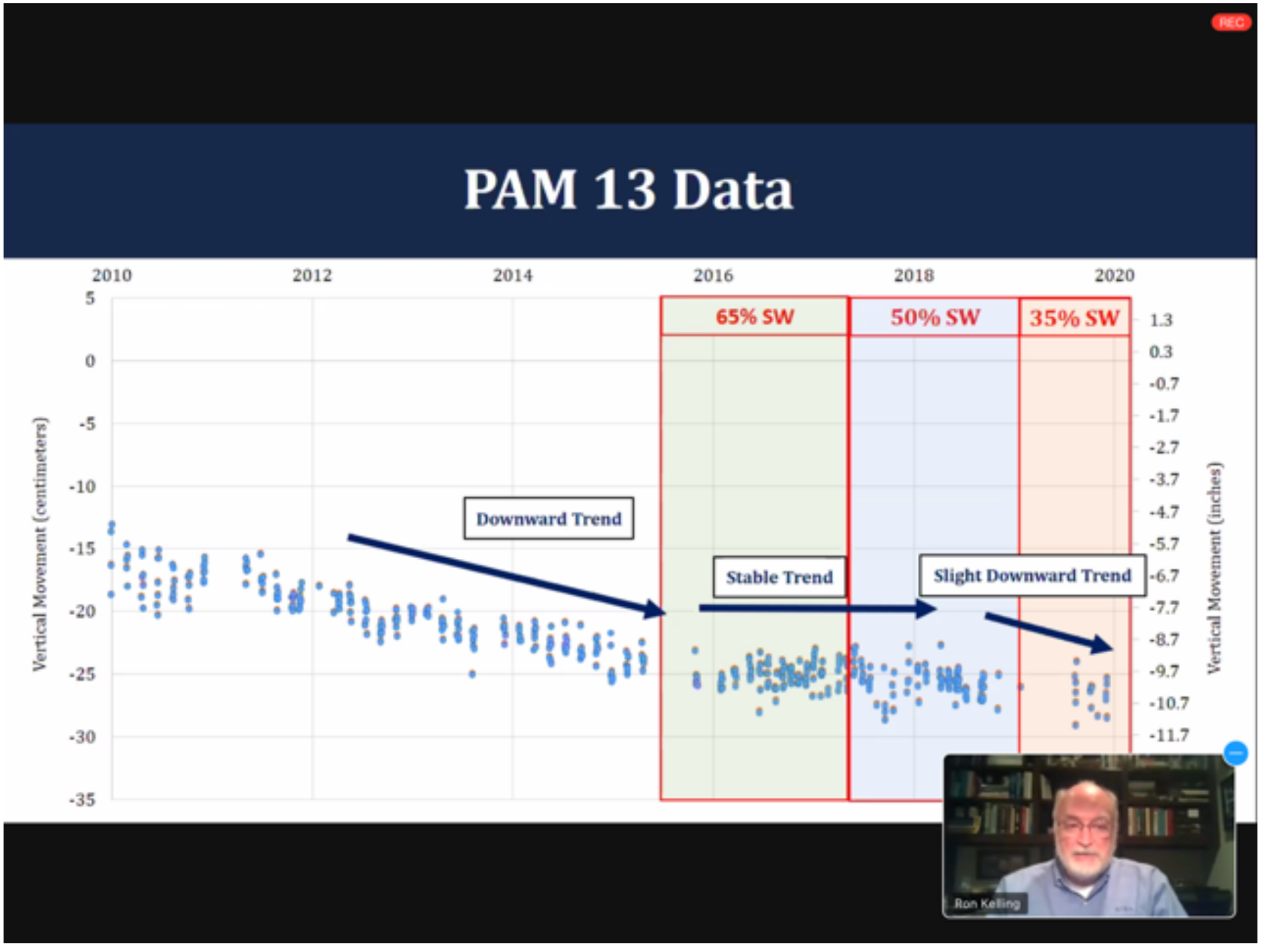
Subsidence at fault line before and after the GRP pipeline became operational in 2015

Subsidence at Pam-13
before and after the GRP pipeline became operational in 2015

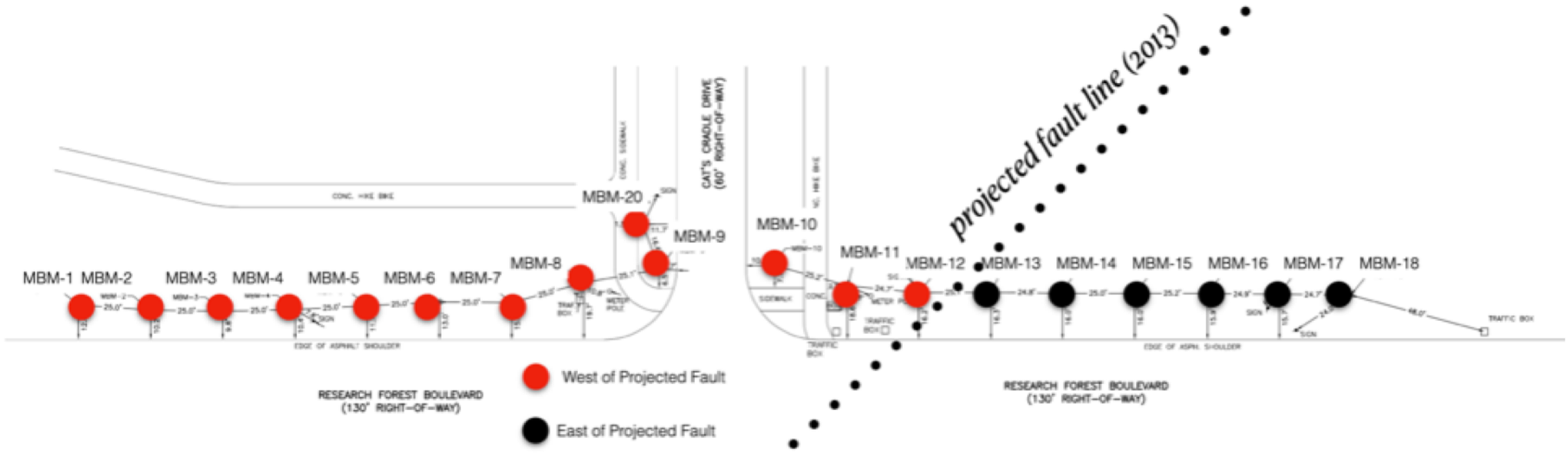


Mike Turco is with the Harris-Galveston Subsidence District

Subsidence at Pam-13
before and after the GRP pipeline became operational in 2015
and during changes in surface and ground water mix since



W2A Survey showing changes in feet on either side of projected fault



Point ID	3/15	9/15	3/16	9/16	3/17	9/17	3/18	9/18	3/19	9/19	3/20	11/20	4/21
MBM1	142.59	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.03	0.03
MBM2	142.80	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
MBM3	143.31	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.03	0.02	0.03	0.04
MBM4	143.35	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.04	0.04	0.05	0.05
MBM5	143.85	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.03	0.04	0.03
MBM6	144.14	0.01	0.01	0.01	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.03
MBM7	144.29	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
MBM8	145.20	0.02	0.01	0.01	0.01	0.01	0.01	0.03	0.01	0.03	0.03	0.04	0.03
MBM20	145.86	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.03
MBM-9	145.51	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
MBM10	145.63	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03
MBM11	146.16	0.02	0.01	0.01	0.01	0.02	0.02	0.04	0.02	0.04	0.03	0.05	0.04
MBM12	145.42	0.01	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.04	0.04
MBM13	145.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
MBM14	144.99	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01
MBM15	144.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MBM16	144.78	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MBM17	144.79	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00
MBM18	144.55	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
					1st Half 65%-50% surface water	millimeters				**2nd Half 50%-65% groundwater**	millimeters		
West	Mean change				0.01	0.03				0.03	0.08		
East	Mean change				0.00	0.00				0.00	0.01		

Future condition of fault if Subsidence returns to pre-GRP rates