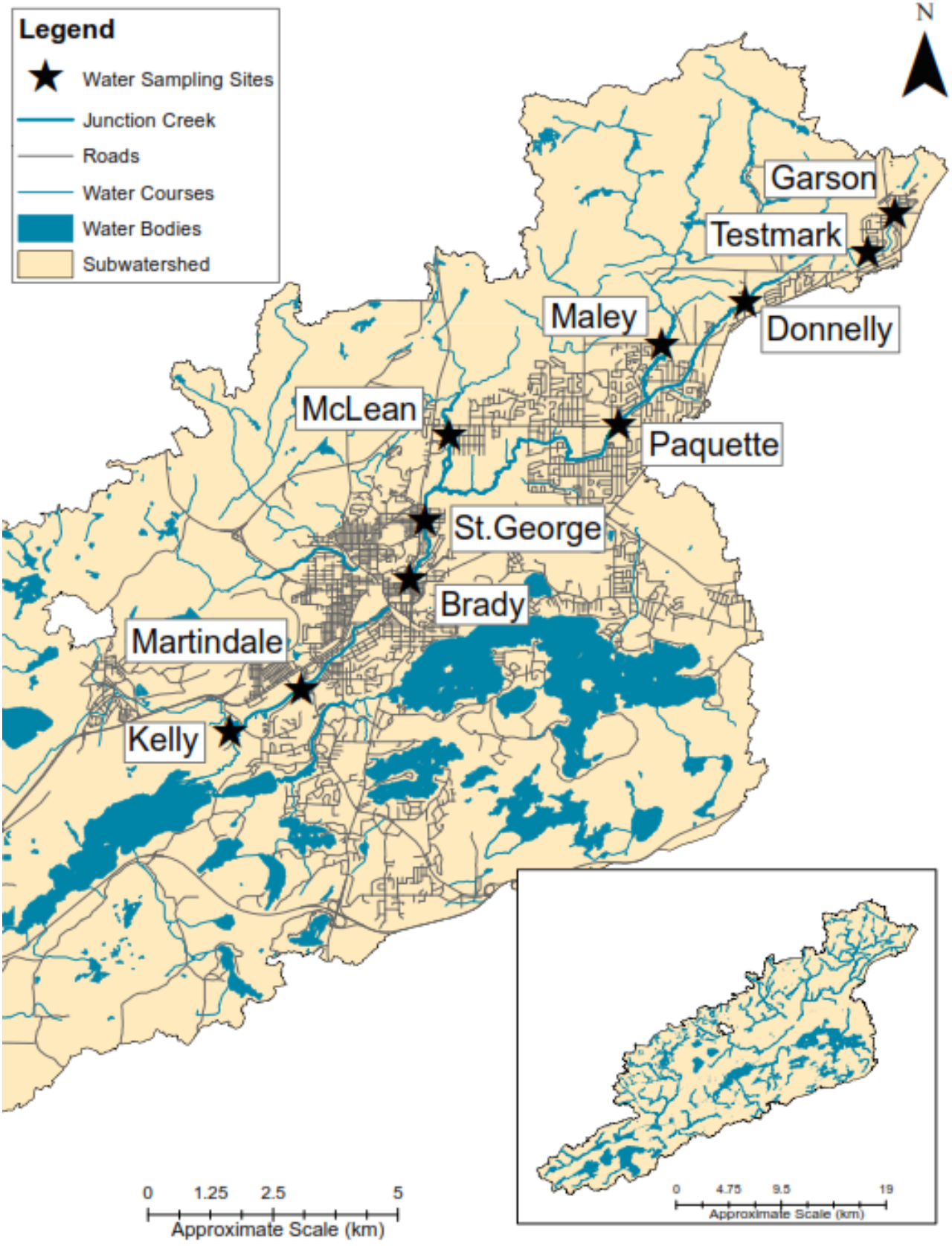

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705-682-2632

City of Greater Sudbury

PROJECT: Junction Creek Subwatershed Study City of Greater Sudbury, Ontario	DWN BY: AW	CHK'D BY: TIM	DATE: September 2017 PROJECT NO: TY161021
TITLE: Vale/Junction Creek Stewardship Committee Surface Water Sampling Sites	REV. NO.: 1	SCALE: as shown	FIGURE NO: D1

Table D1: Pearson Correlation Results of Chemical Parameter Temporal Trends

Site	Al	Alkalinity	As	Ca	Cd	Cl	Cu	F	Fe	Hardness	Hg	K
Brady	0.18	-0.2	-0.06	-0.03	0.13	-0.02	0.09	-0.1	0.27	-0.02	N/A	0.04
Donnelly	0.53	-0.19	-0.19	-0.07	0.28	0.01	0.03	0.31	-0.06	-0.06	-0.11	-0.01
Garson	-0.26	0.52	0.18	0.04	-0.48	-0.3	-0.14	-0.06	-0.06	0.04	-0.12	-0.01
Kelly	-0.01	0.21	0.07	-0.02	-0.22	0.03	0.04	0.13	0.09	0.02	N/A	0.02
Maley	0.24	-0.21	0.1	-0.08	0.23	-0.08	0.2	0.09	0.17	-0.08	0.04	-0.02
Martindale	-0.1	-0.16	-0.07	0.04	0.11	-0.02	0.21	0.02	-0.14	0.04	0.12	0.13
McLean	0.24	-0.03	-0.03	0.05	0.34	-0.04	0.42	0.03	-0.02	0.07	-0.44	0.09
Paquette	0.22	-0.21	0.11	-0.04	0.03	0.04	-0.02	0.07	0.19	-0.04	-0.26	0.03
St.George	-0.1	0.25	-0.05	-0.04	0.03	0.11	-0.14	N/A	-0.09	0	-0.09	-0.02
Testmark	-0.04	0.07	0.19	0.11	-0.31	0.01	-0.12	-0.18	-0.08	0.1	-0.31	0.14

Site	Mg	Mn	Mo	Na	Ni	NO3	P	Pb	pH	Se	SO3	SS	Zn
Brady	0.08	0.05	0.15	0.06	0.09	-0.01	0.25	0.2	-0.02	-0.12	0.04	0.3	0.39
Donnelly	0	0.28	0.05	0.03	0.18	0.13	-0.36	0.57	-0.05	0.03	-0.07	-0.12	-0.01
Garson	-0.08	0.11	-0.16	-0.26	-0.06	-0.18	-0.31	-0.31	0.61	-0.35	0.04	-0.23	-0.38
Kelly	0.16	0.2	-0.19	-0.08	-0.03	-0.33	0.32	-0.02	0.03	-0.07	-0.01	0.03	0.13
Maley	-0.07	-0.04	0.09	-0.05	0.2	0.03	0.22	0.22	-0.27	0.05	0.07	0.2	0.21
Martin-dale	0.04	-0.21	0.03	0.03	-0.21	-0.19	-0.3	-0.14	0.11	0.09	0.06	-0.06	-0.04
McLean	0.12	0	0.19	-0.03	0.2	0.36	0.12	0.06	-0.34	N/A	0.1	0.08	0.29
Paquette	-0.05	-0.06	0.19	0.03	-0.16	0	-0.19	0.2	-0.19	0.03	-0.05	0.2	0.12
St. George	-0.01	0.25	0.17	0.1	-0.04	0.05	0.05	-0.15	-0.03	-0.06	-0.04	-0.1	-0.15
Testmark	0.06	0	0.2	0.07	-0.29	0.1	-0.06	-0.08	0.21	0.07	0.11	-0.01	-0.24

Notes:

1. Highlighted cells denote statistically significant ($p<0.05$) results
2. Results range from -1 to 1, with negative values indicating a decrease over time and positive values indicating an increase over time
3. N/A values resulted from zero change through time, ie. consecutive concentrations below the lowest detection limit

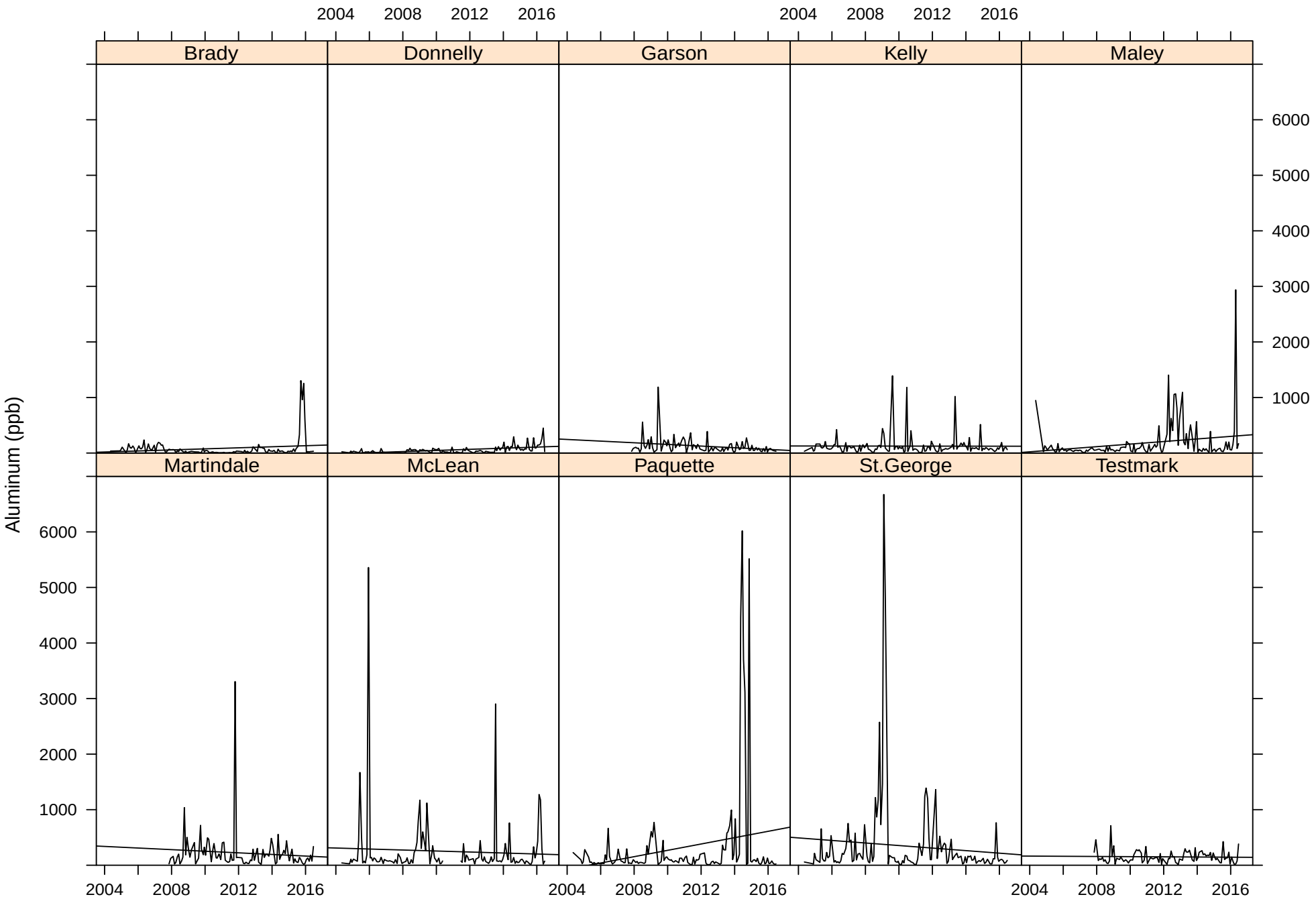


Figure D2: Temporal Trends in Aluminum Concentrations within Junction Creek

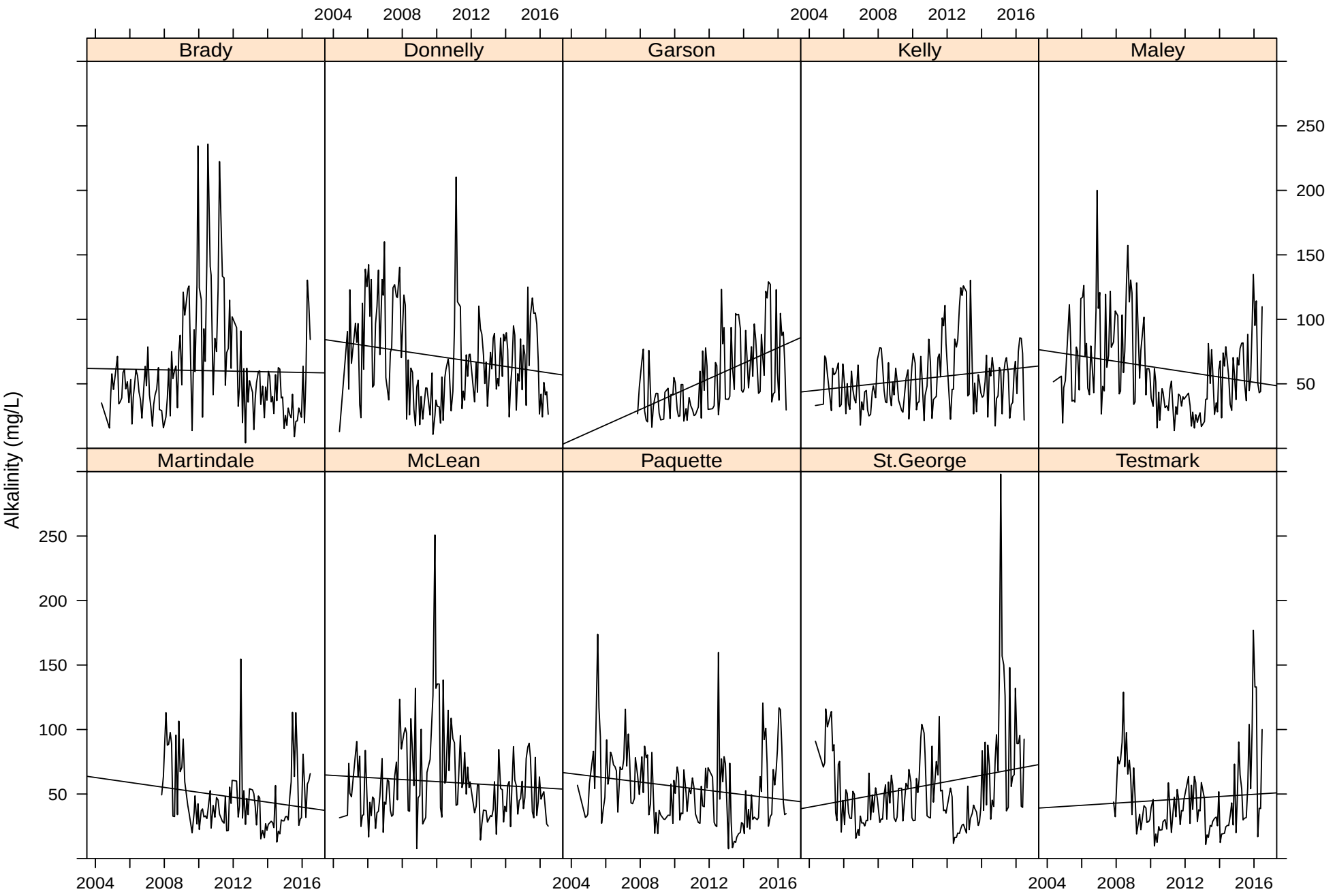


Figure D3: Temporal Trends in Alkilinity within Junction Creek

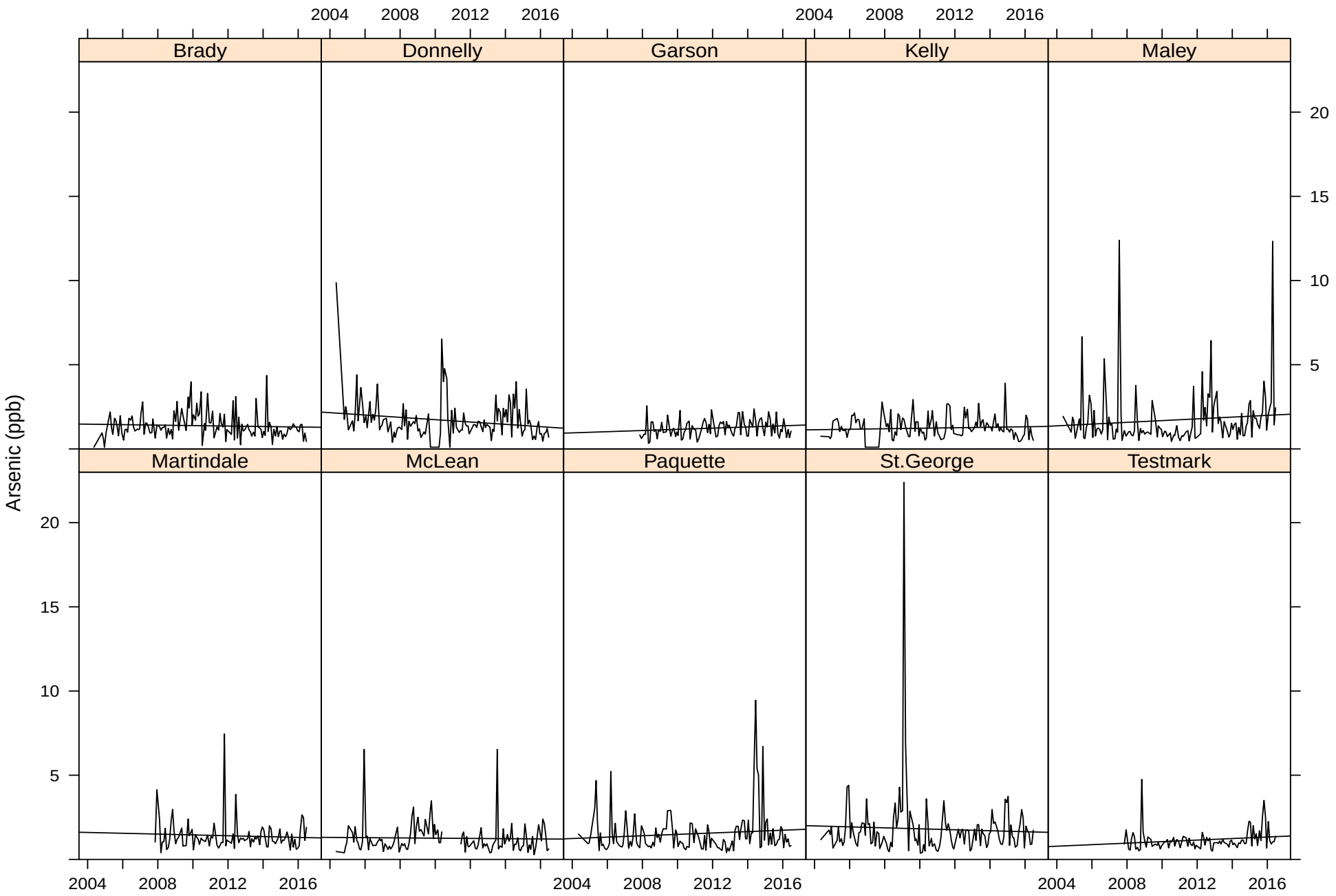


Figure D4: Temporal Trends in Arsenic Concentrations within Junction Creek

* The PWQO MAC is 100 ppb

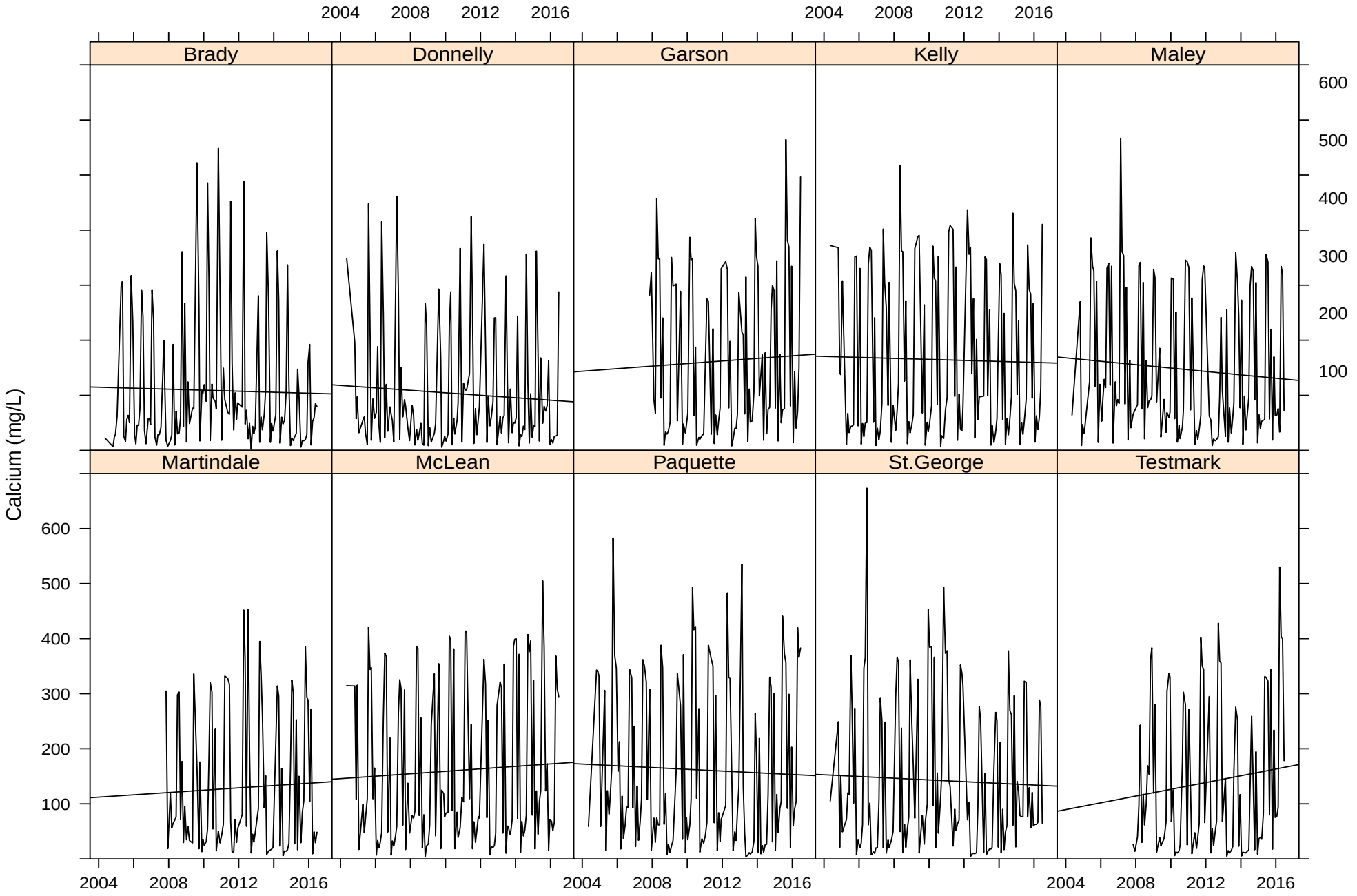


Figure D5: Temporal Trends in Calcium Concentrations within Junction Creek

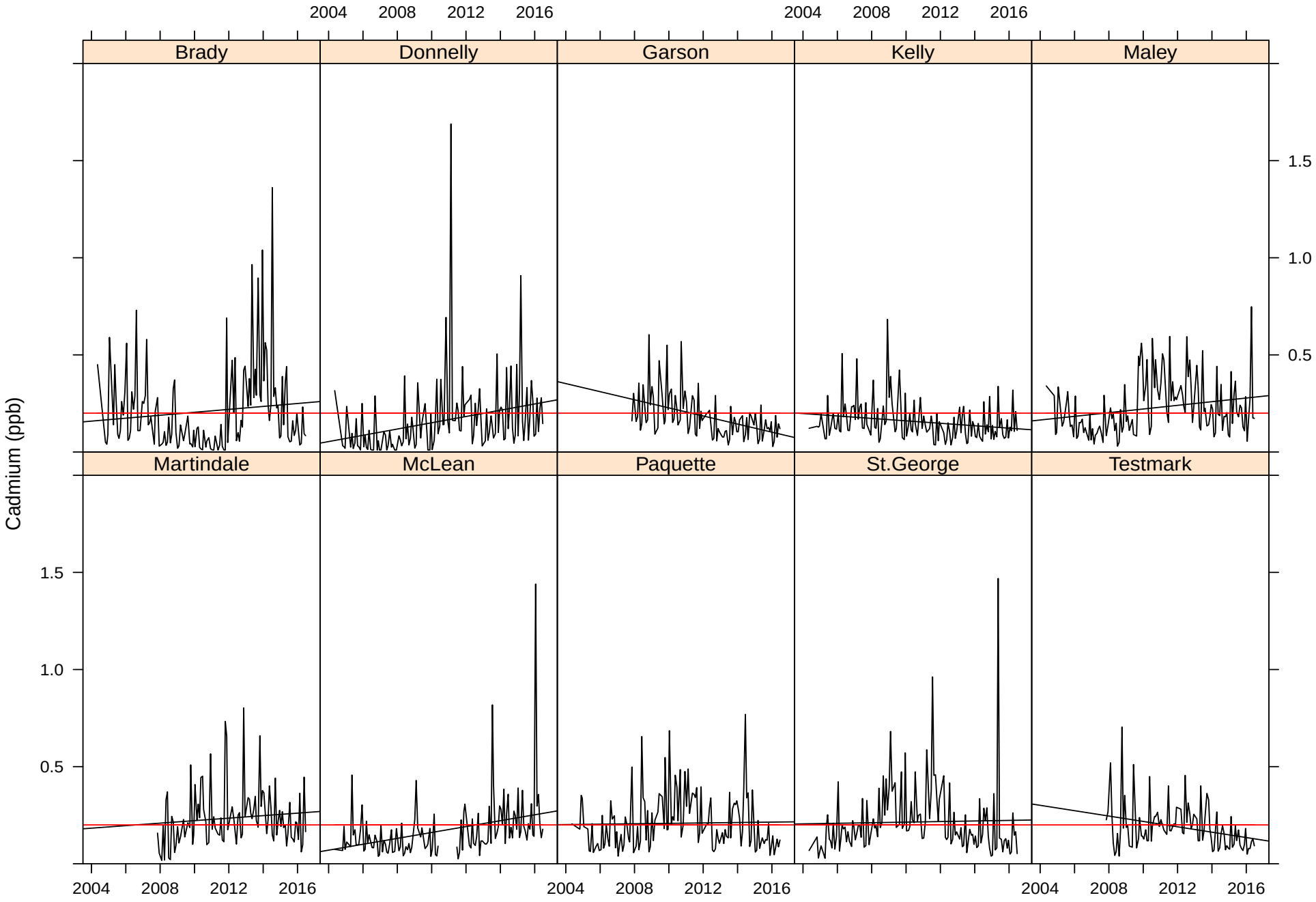


Figure D6: Temporal Trends in Cadmium Concentrations within Junction Creek

* The red line indicates the PWQO MAC of 0.2 ppb

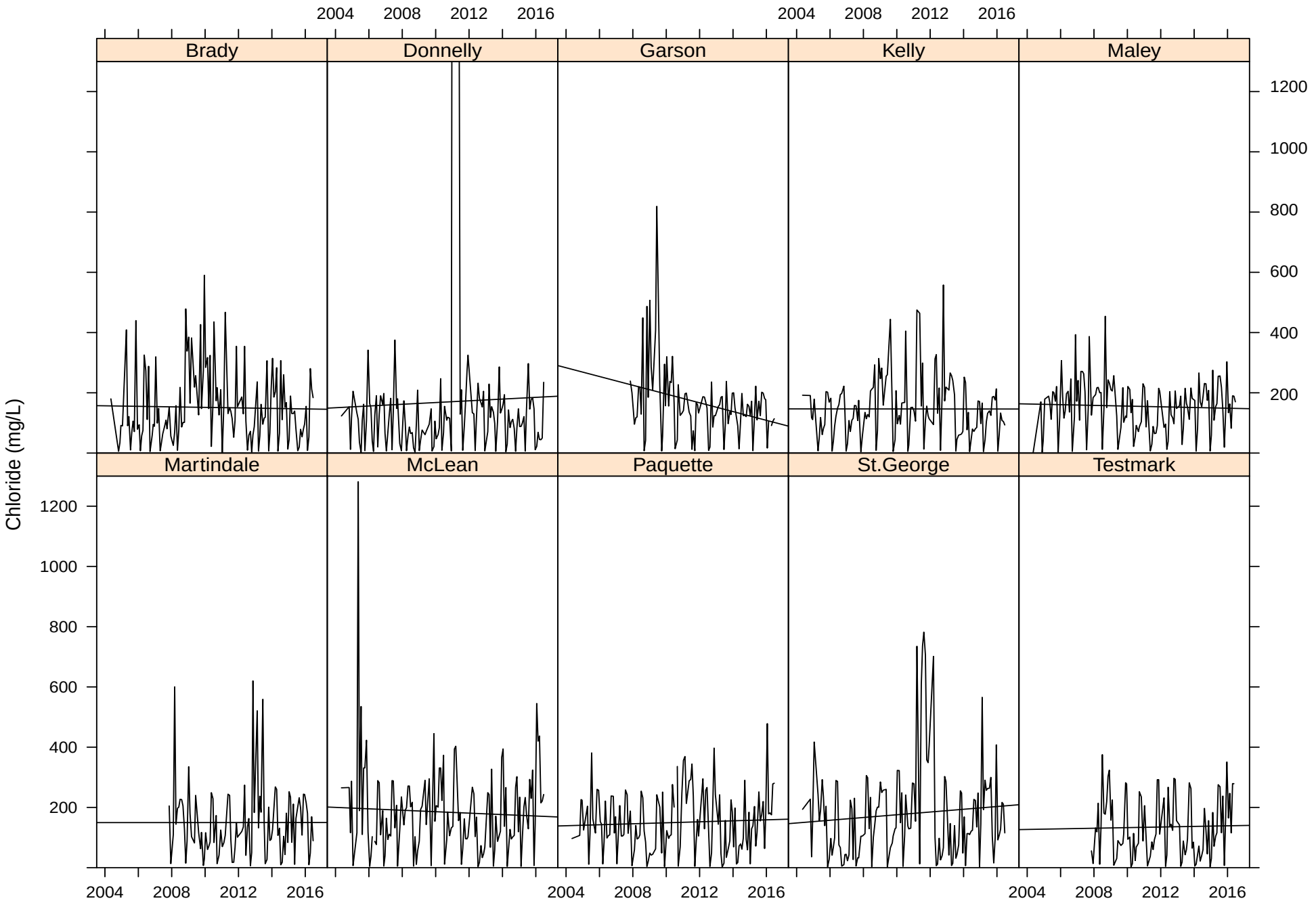


Figure D7: Temporal Trends in Chloride Concentrations within Junction Creek

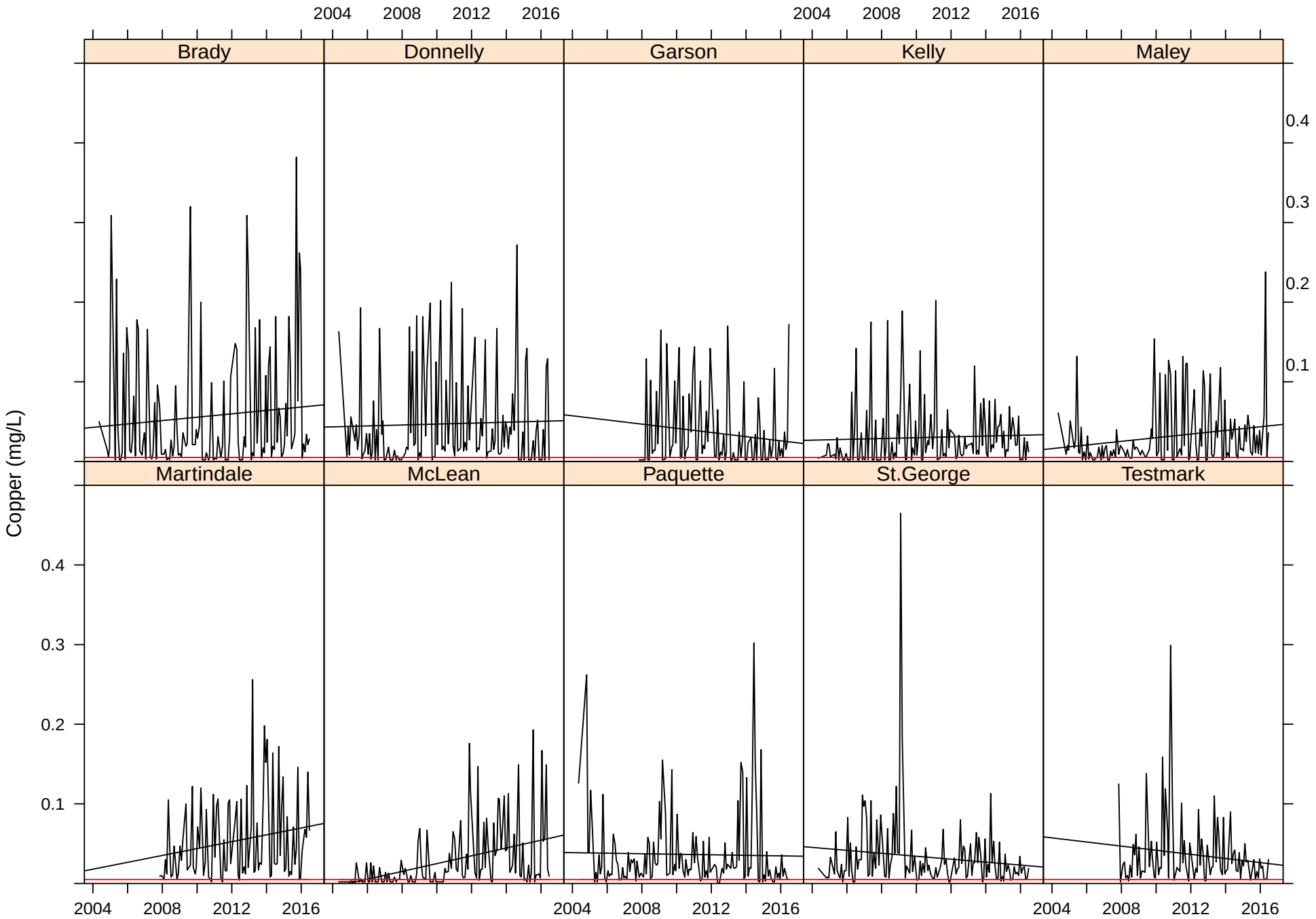


Figure D8: Temporal Trends in Copper Concentrations within Junction Creek

* The red line indicates the PWQO MAC of 0.005 mg/L

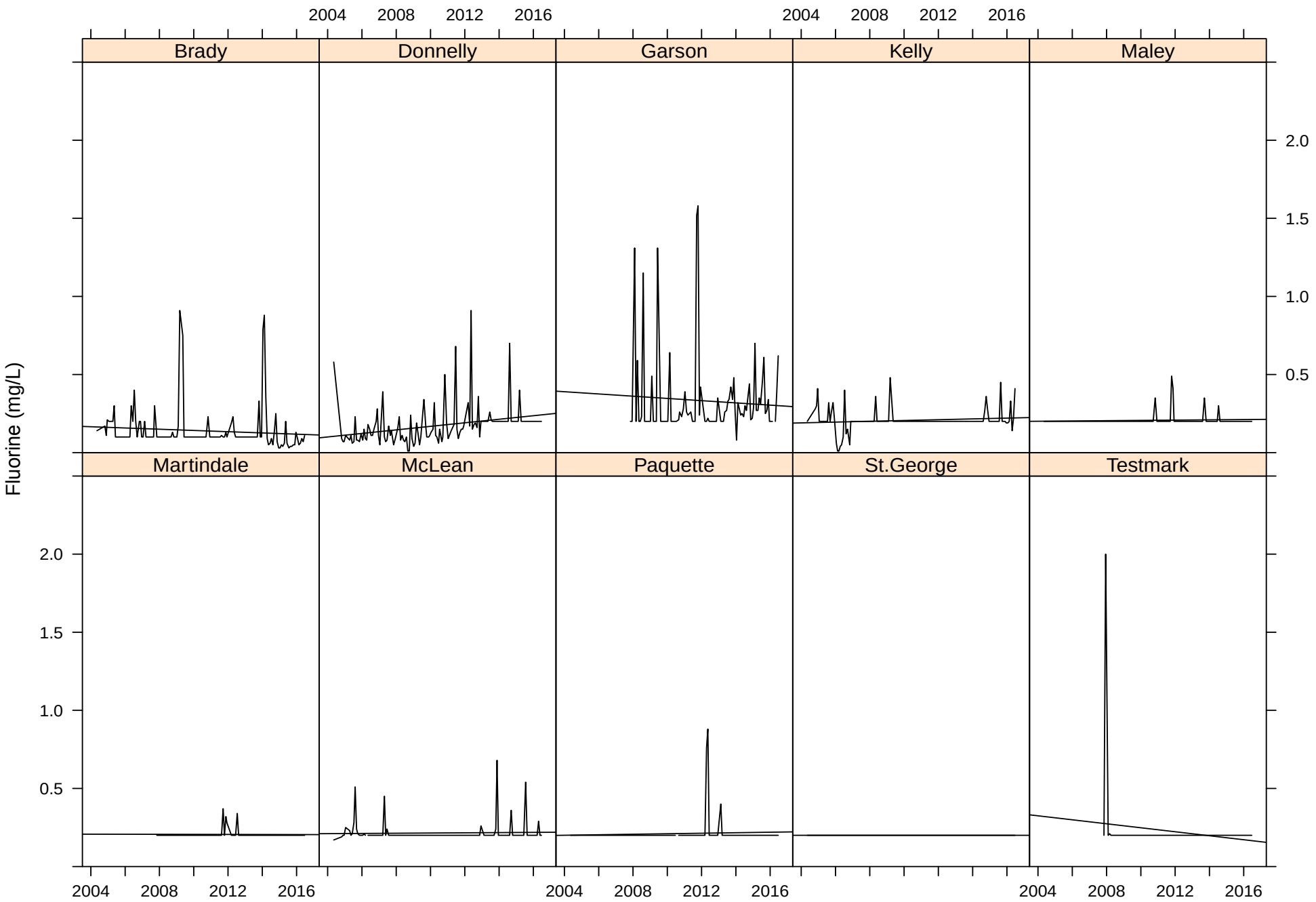


Figure D9: Temporal Trends in Fluorine Concentrations wihtin Junction Creek

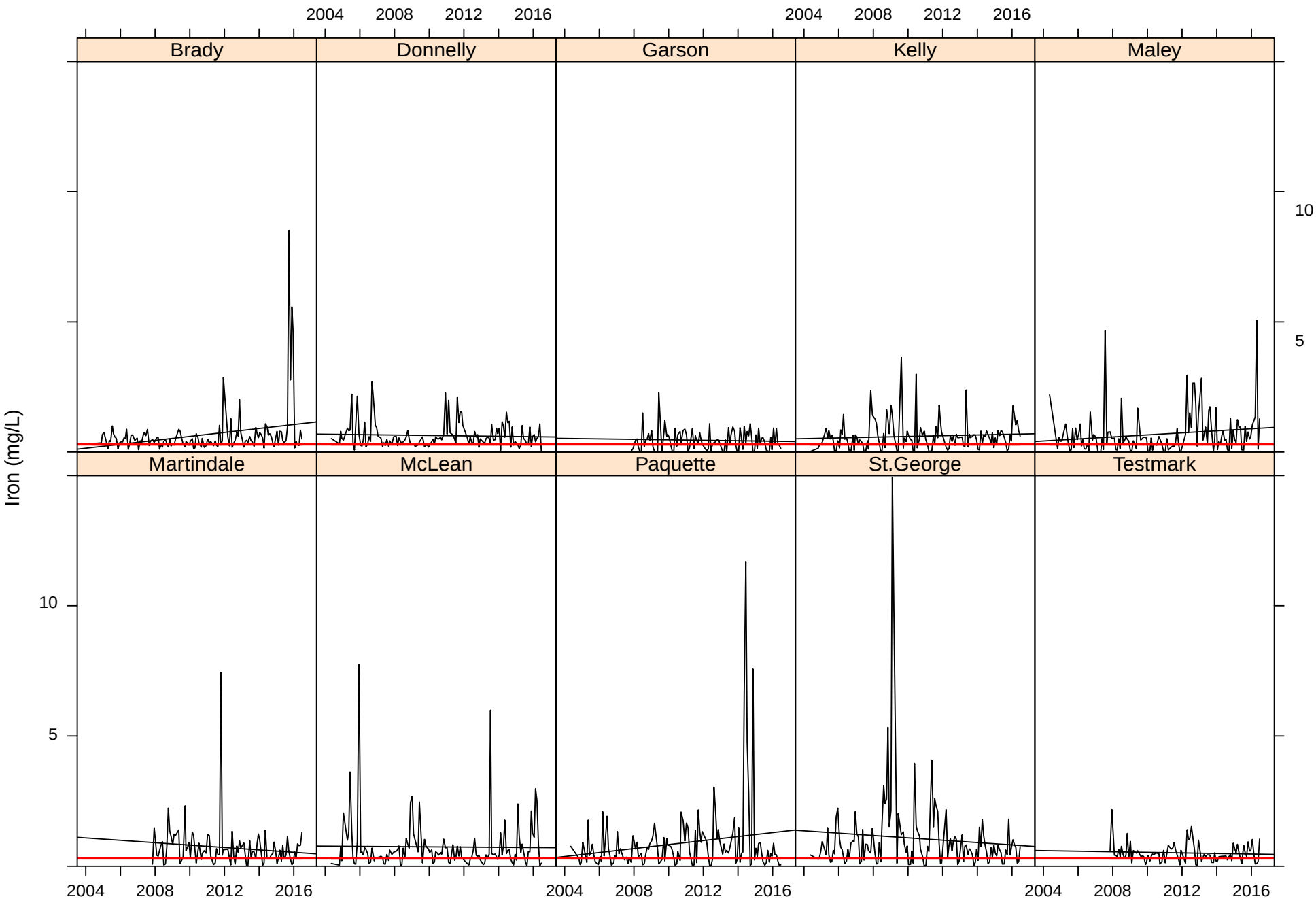


Figure D10: Temporal Trends in Iron Concentrations within Junction Creek

* The red line represents the PWQO MAC of 0.3 mg/L

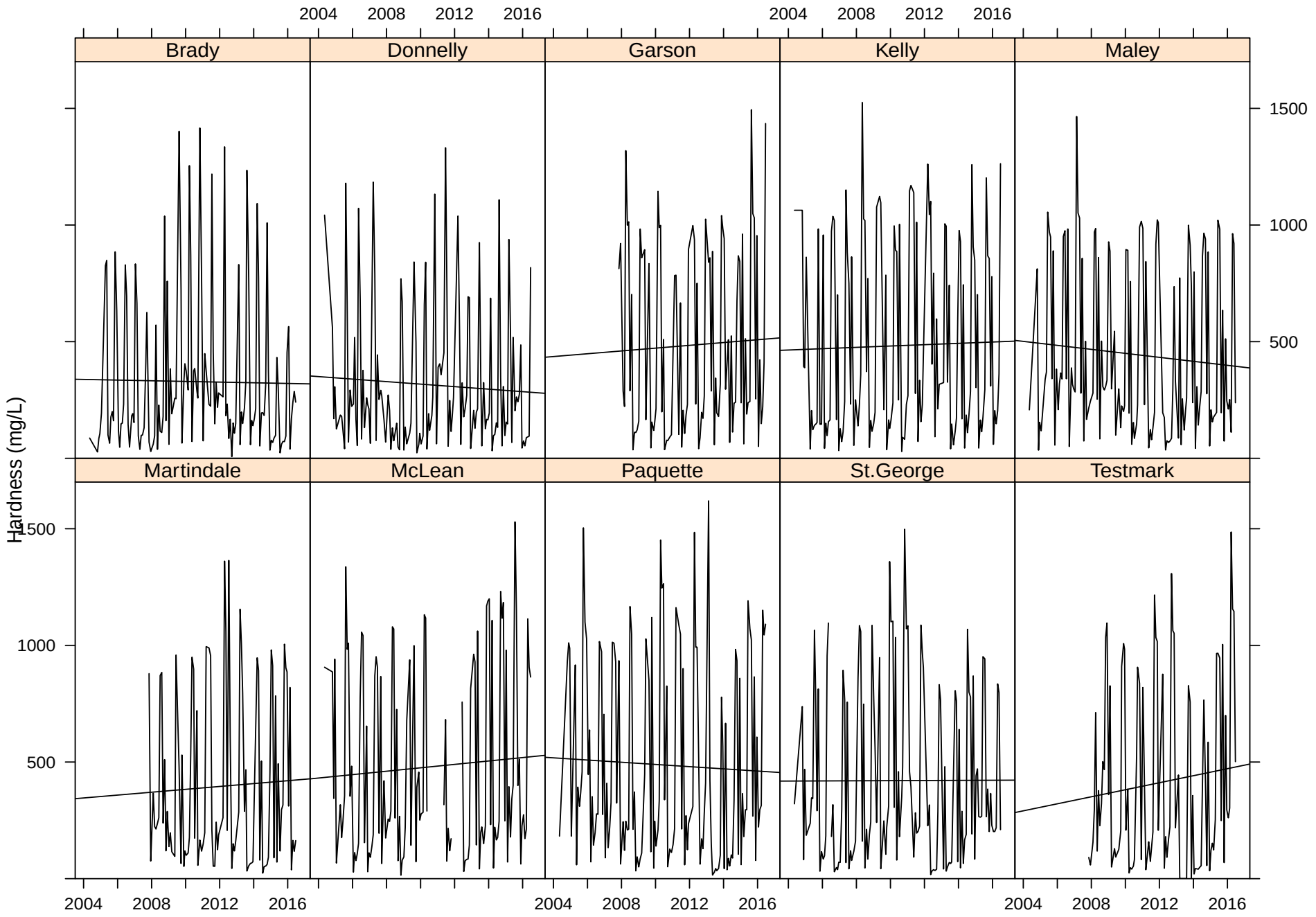


Figure D11: Temporal Trends in Hardness within Junction Creek

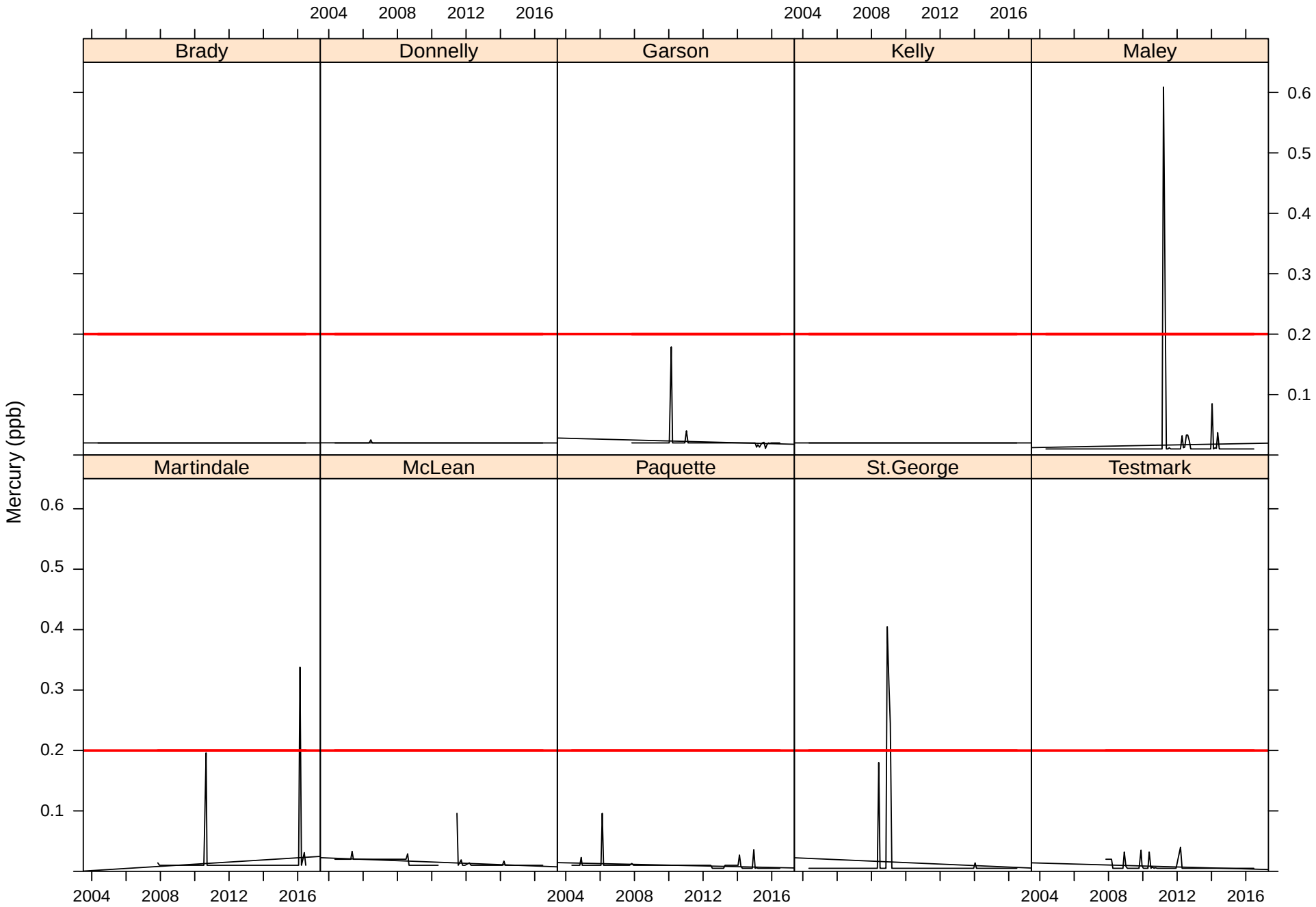


Figure D12: Temporal Trends in Mercury Concentrations within Junction Creek

* The red line represents the PWQO MAC of 0.2 ppb

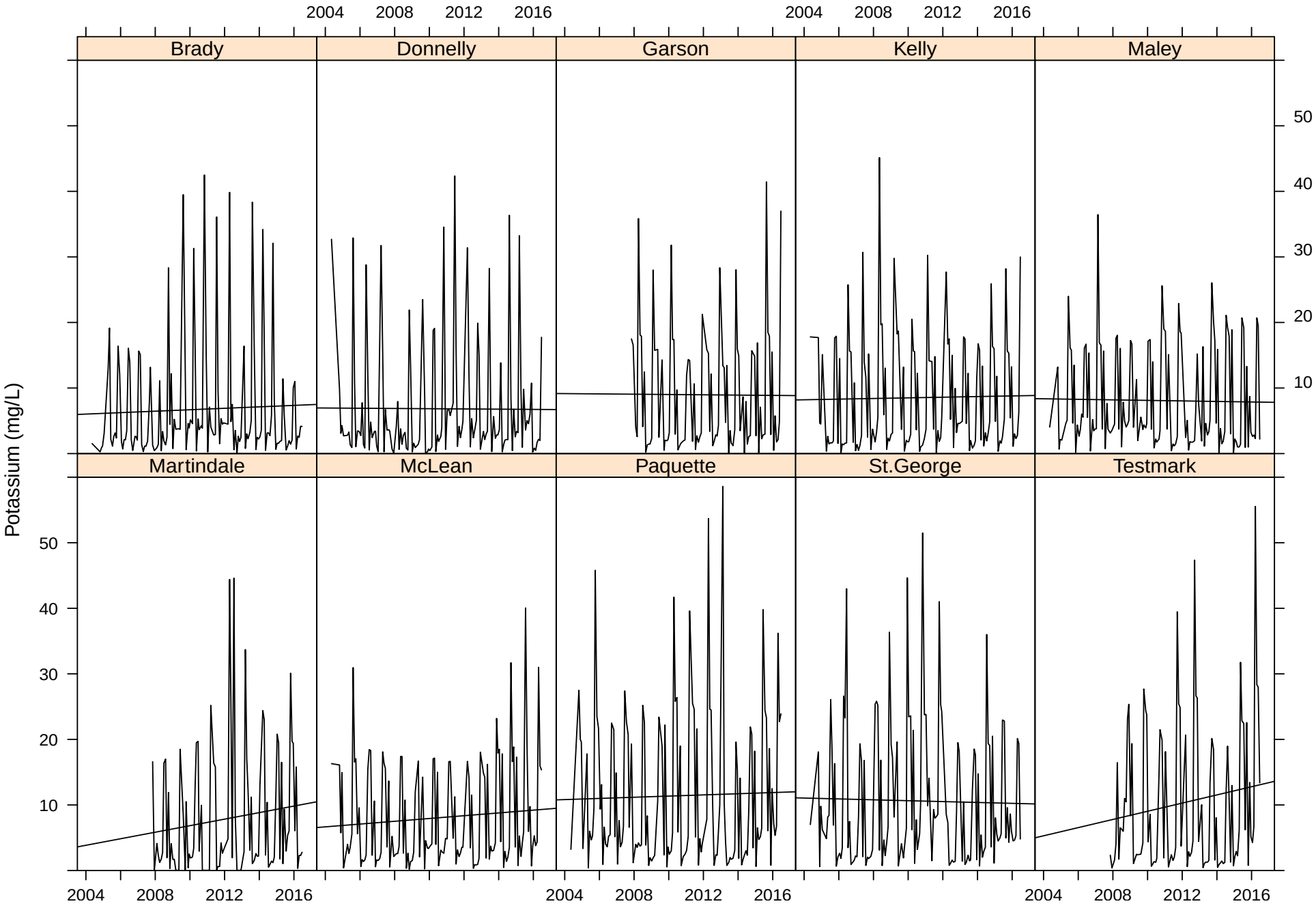


Figure D13: Temporal Trends in Potassium Concentrations within Junction Creek

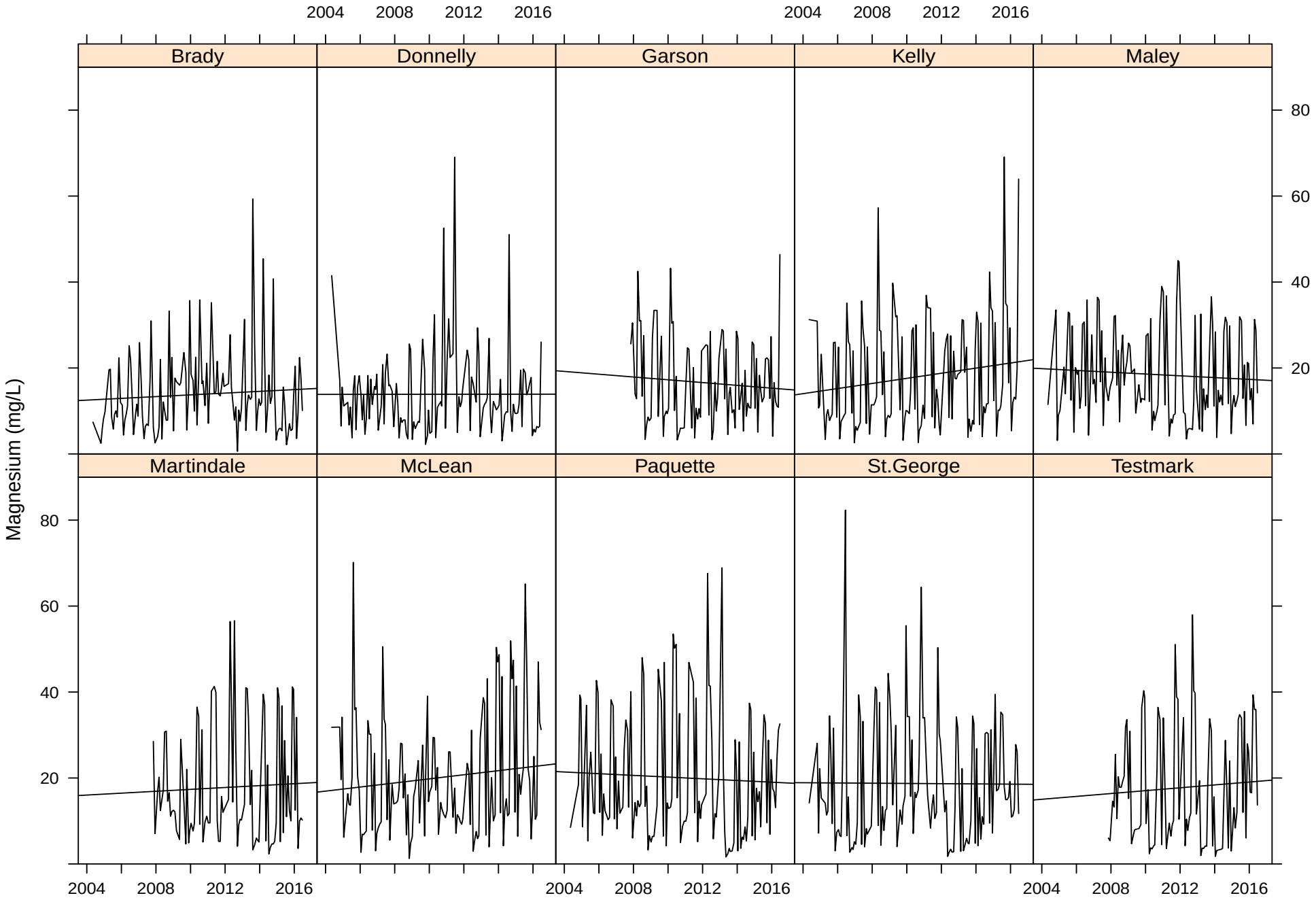


Figure 2.4.14: Temporal Trends in Magnesium Concentrations within Junction Creek

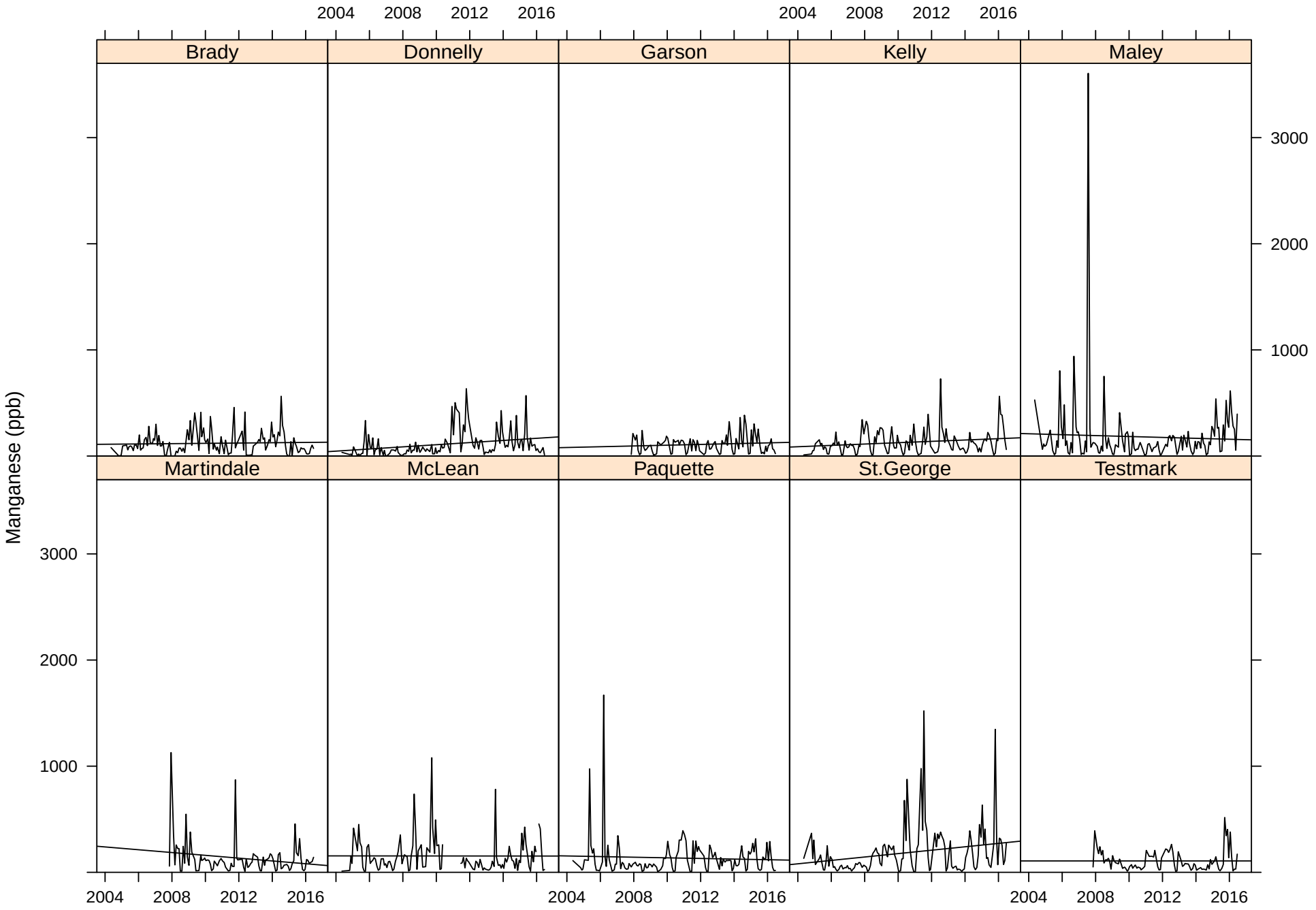


Figure D15: Temporal Trends in Manganese Concentrations within Junction Creek

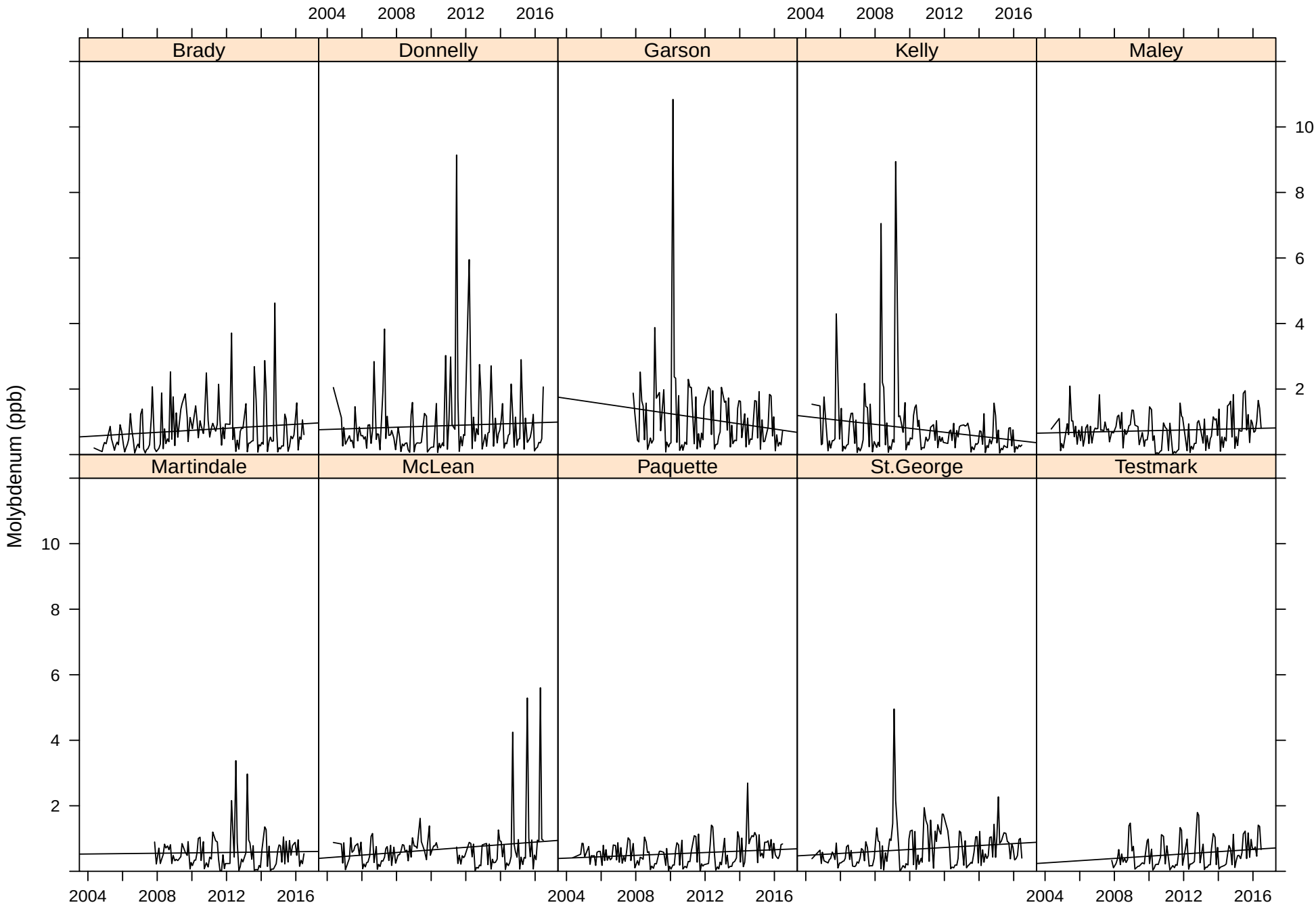


Figure D16: Temporal Trends in Molybdenum Concentrations within Junction Creek

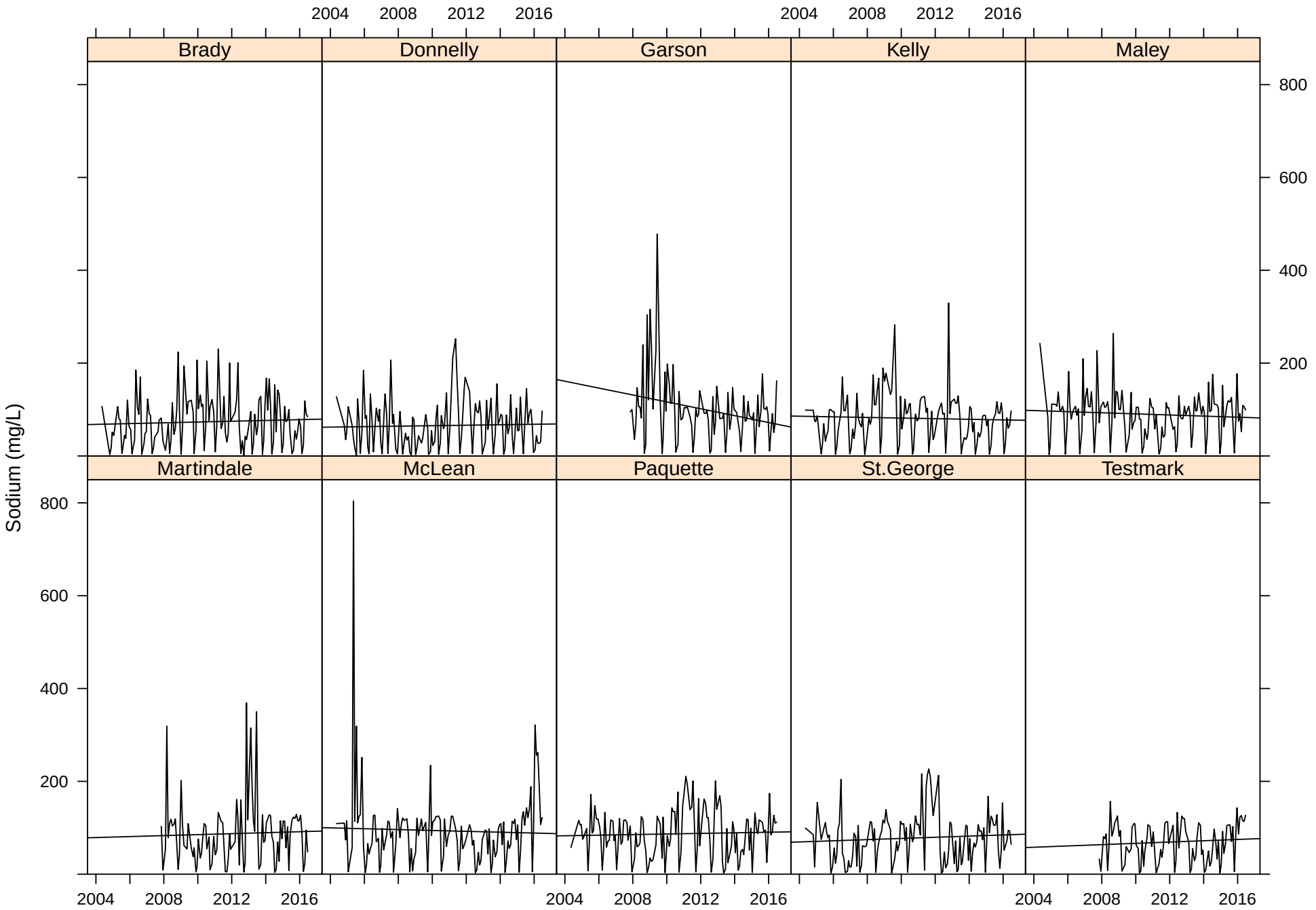


Figure D17: Temporal Trends in Sodium Concentrations within Junction Creek

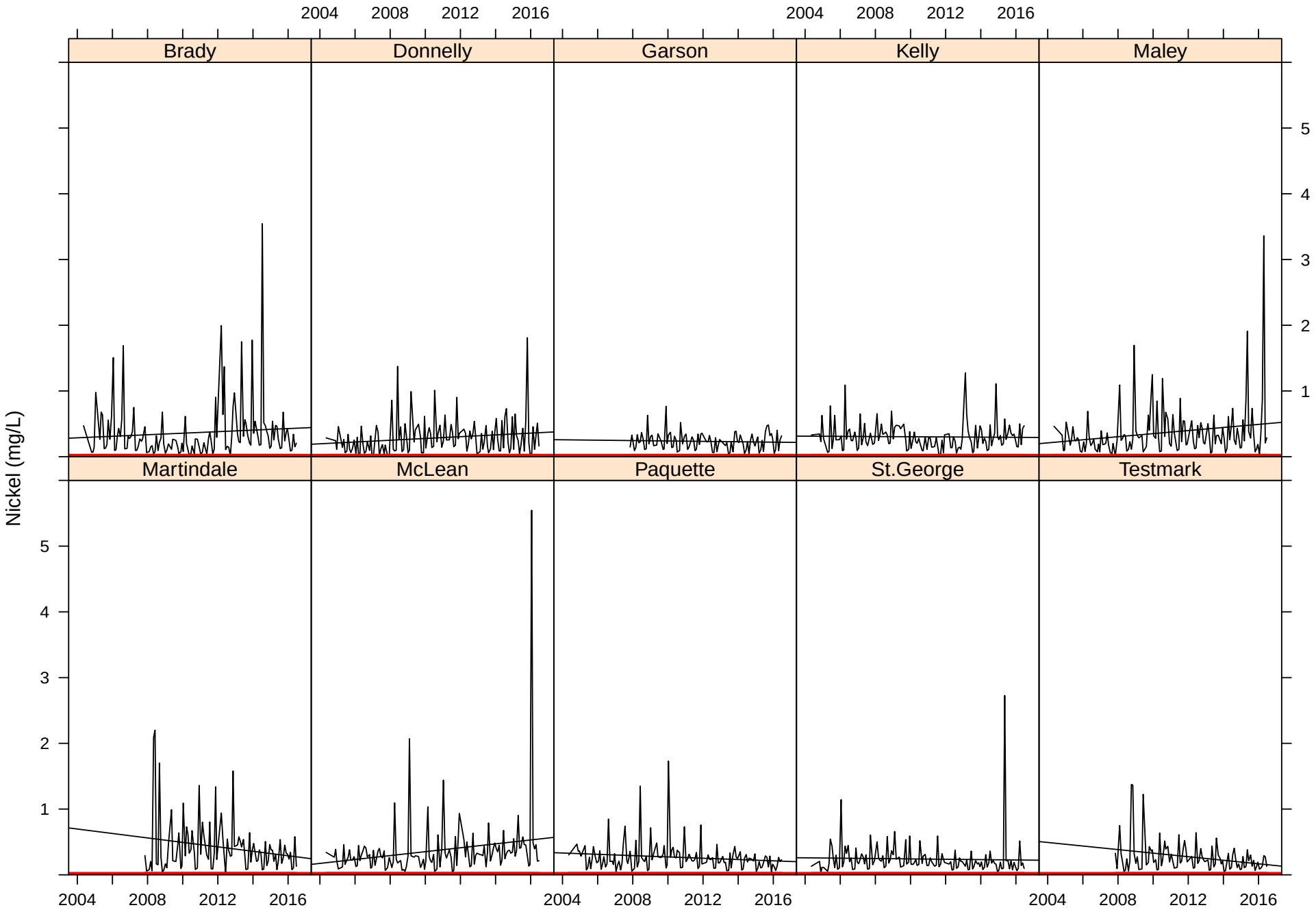


Figure D18: Temproal Trends in Nickel Concentrations within Junction Creek

* The red line represents the PWQO MAC of 0.025 mg/L

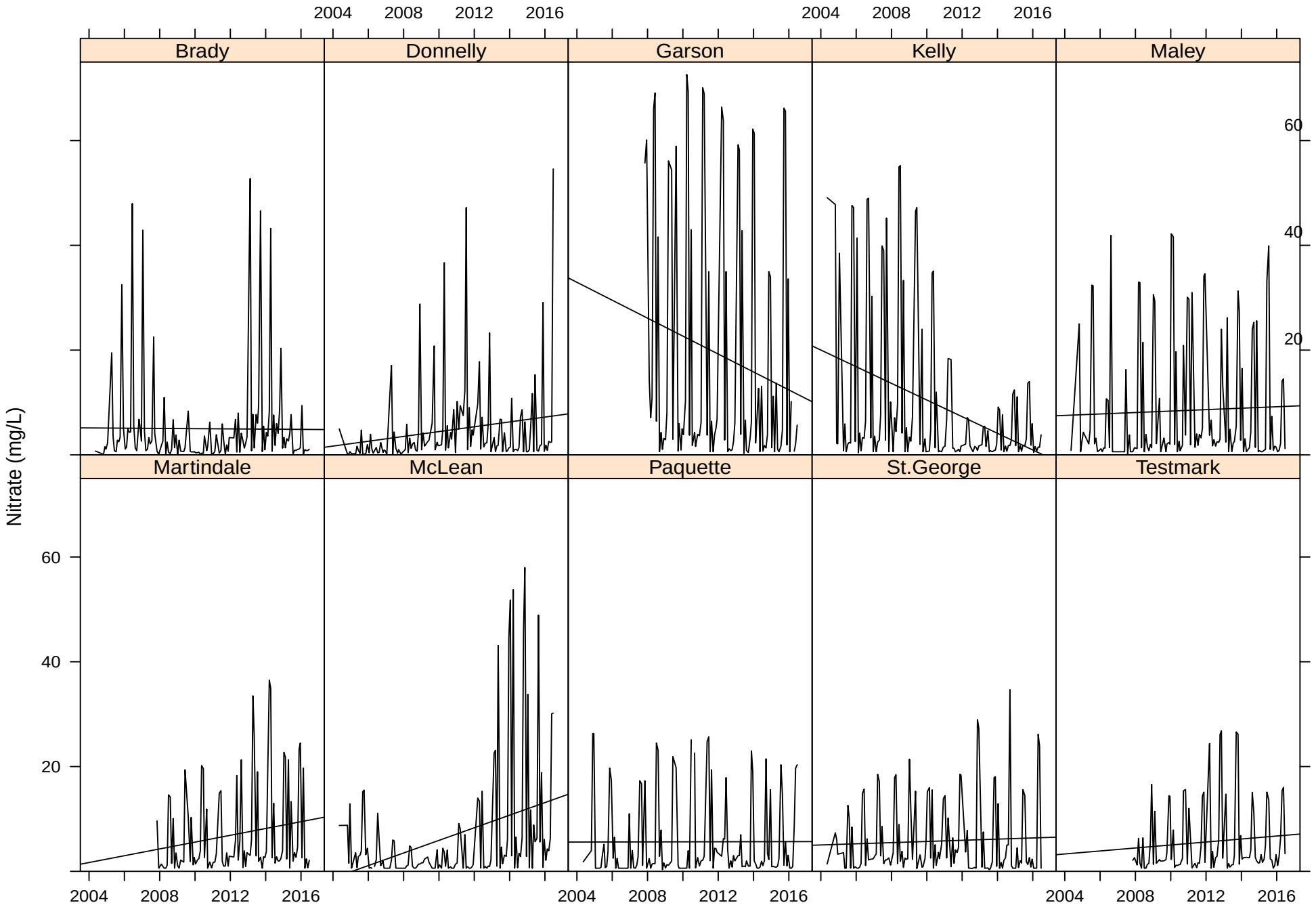


Figure D19: Temporal Trends in Nitrate Concentrations within Junction Creek

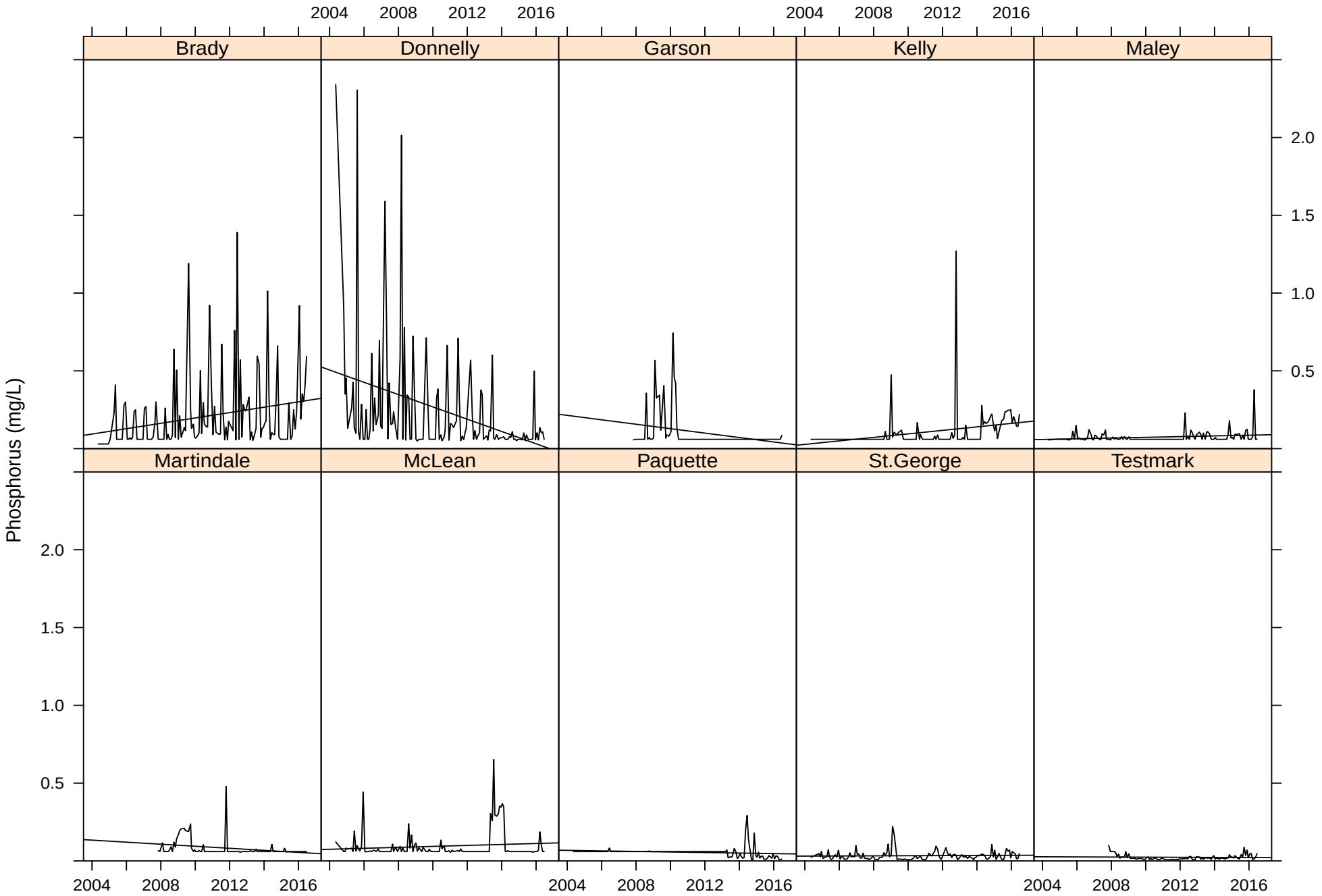


Figure D20: Temporal Trends in Phosphorus Concentrations within Junction Creek

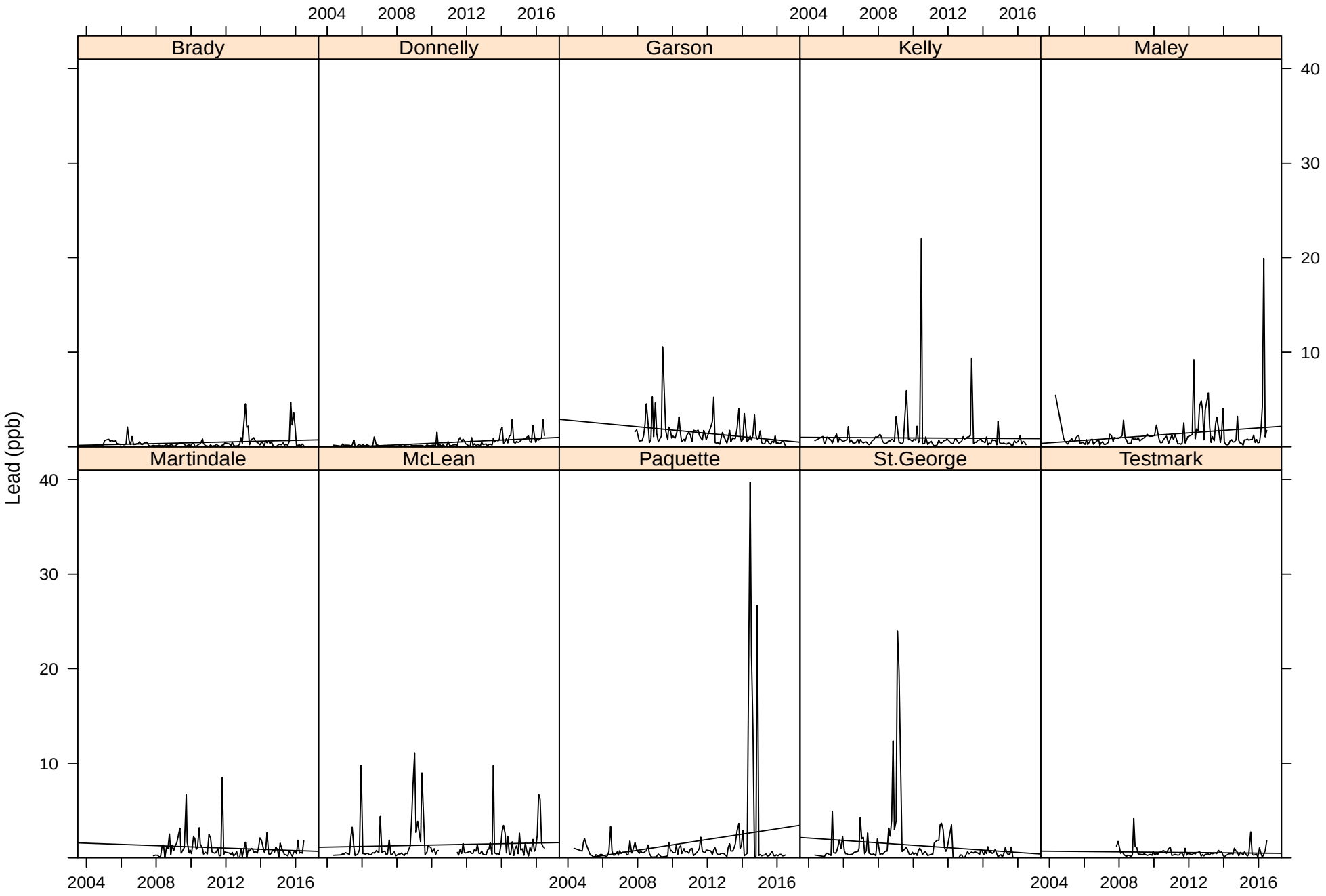


Figure D21: Temporal Trends in Lead Concentrations within Junction Creek

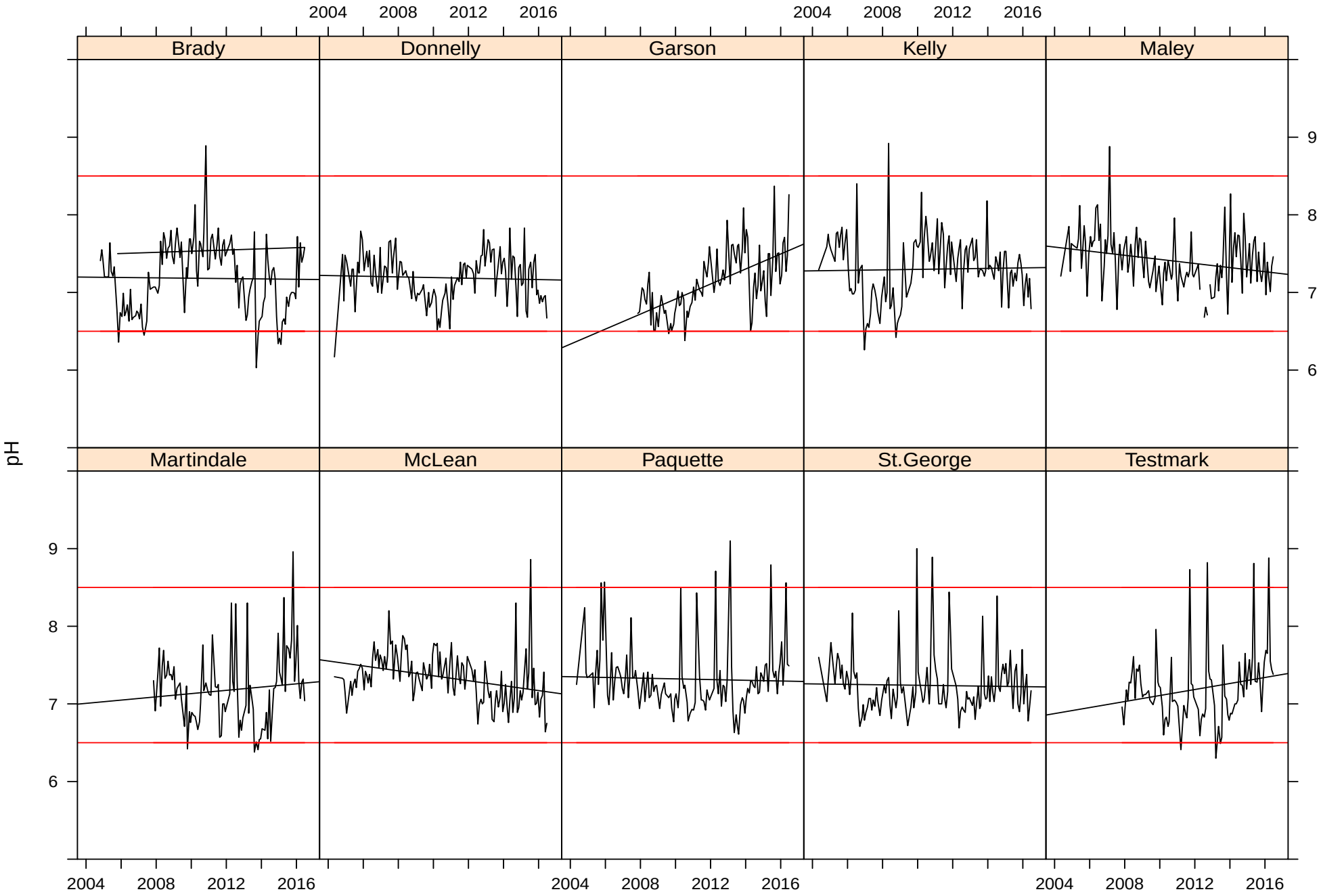


Figure D22: Temporal Trends in pH within Junction Creek

* The two red line represent the PWQO pH range of 6.5 - 8.5

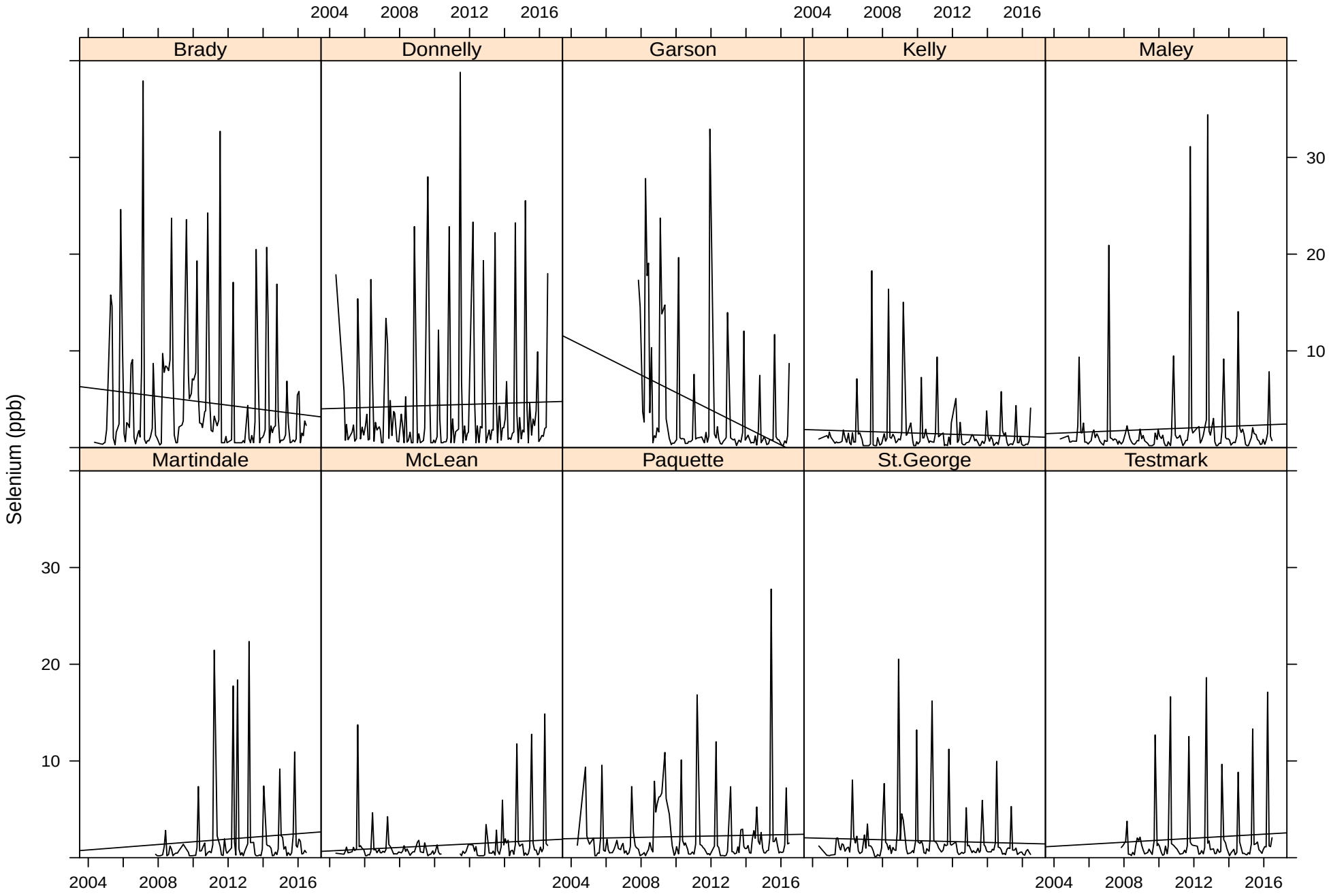


Figure D23: Temporal Trends in Selenium Concentrations within Junction Creek

* The PWQO MAC is 100 ppb

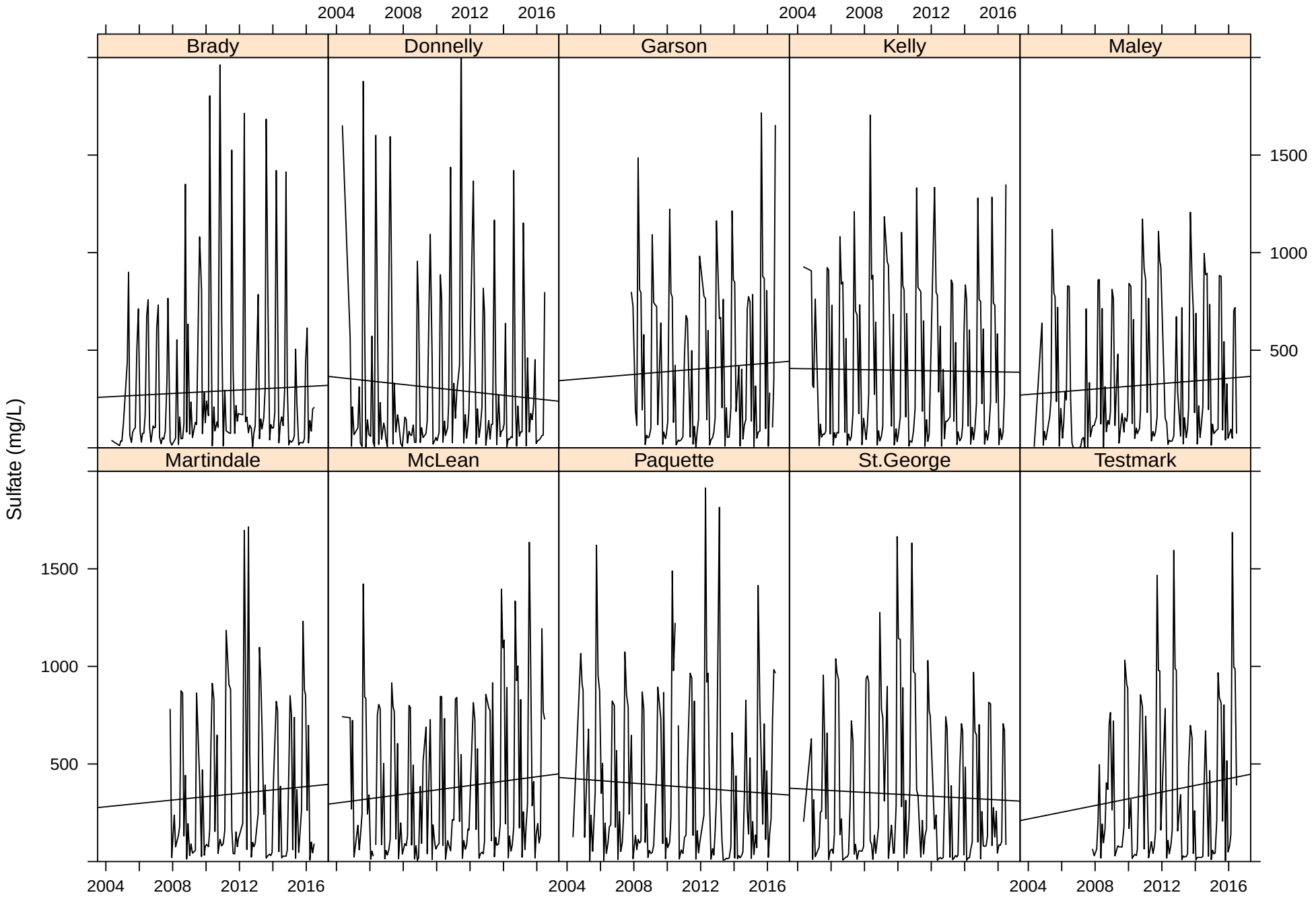


Figure D24: Temporal Trends in Sulfate Concentrations within Junction Creek

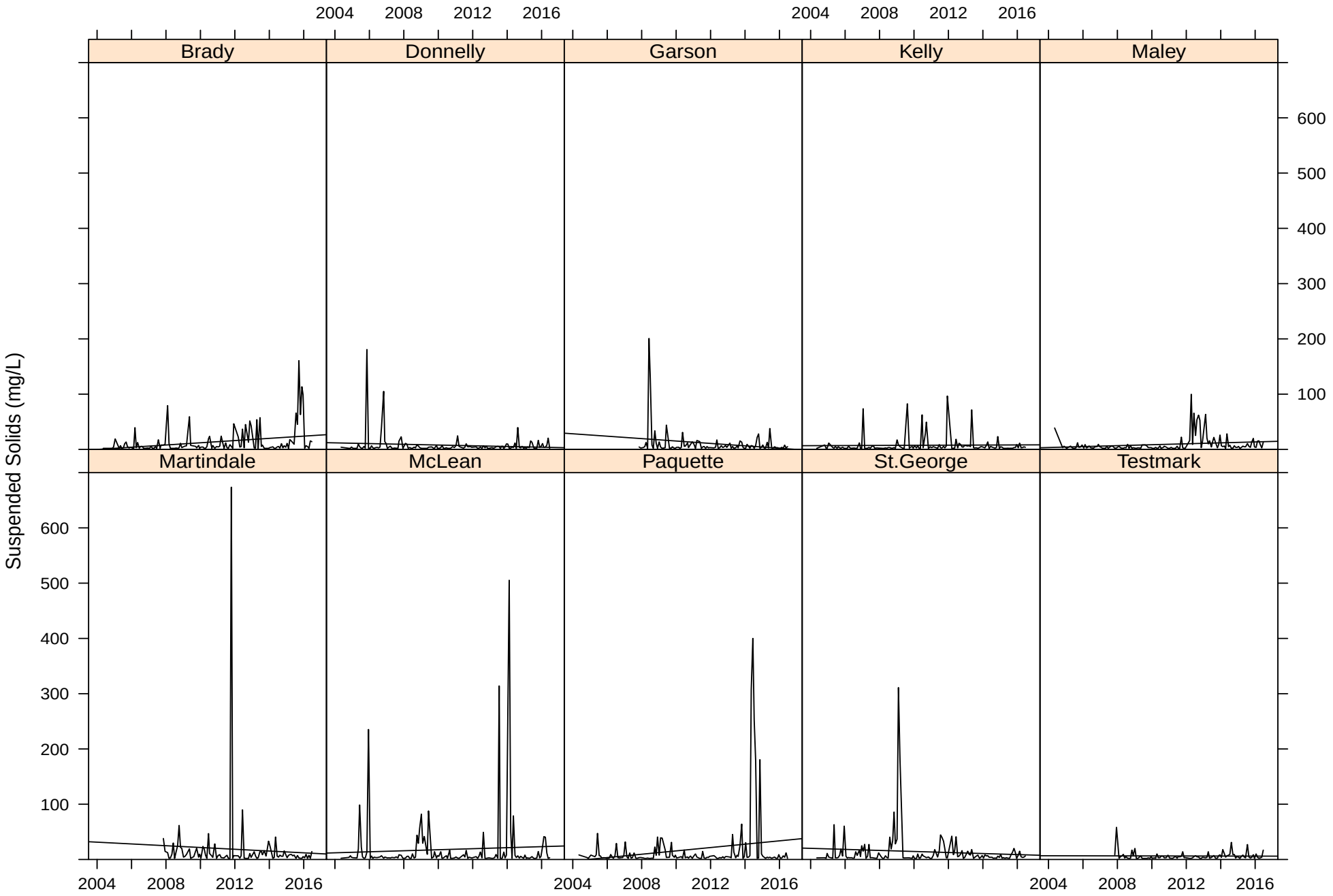


Figure D25: Temporal Trends in Suspended Solids within Junction Creek

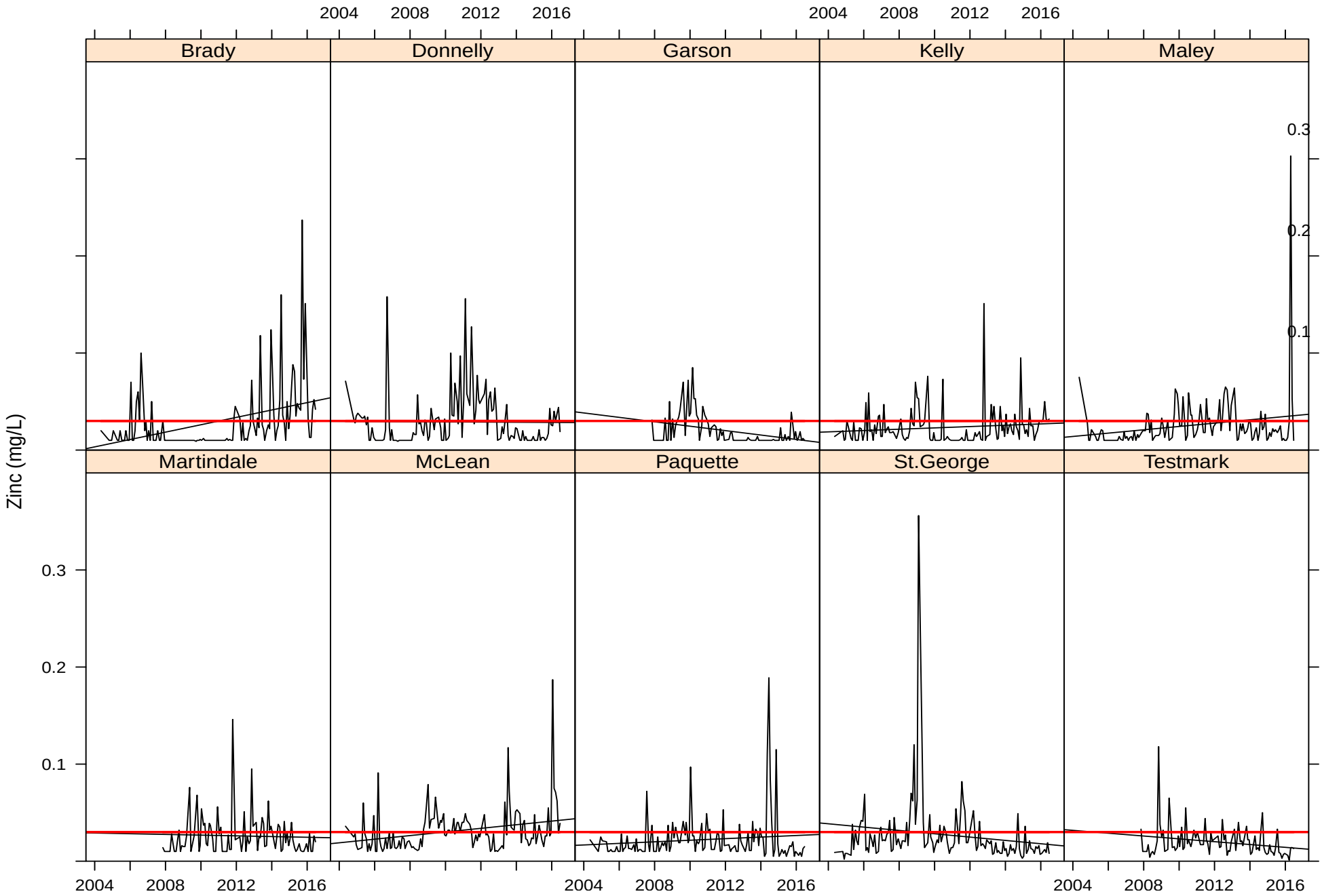
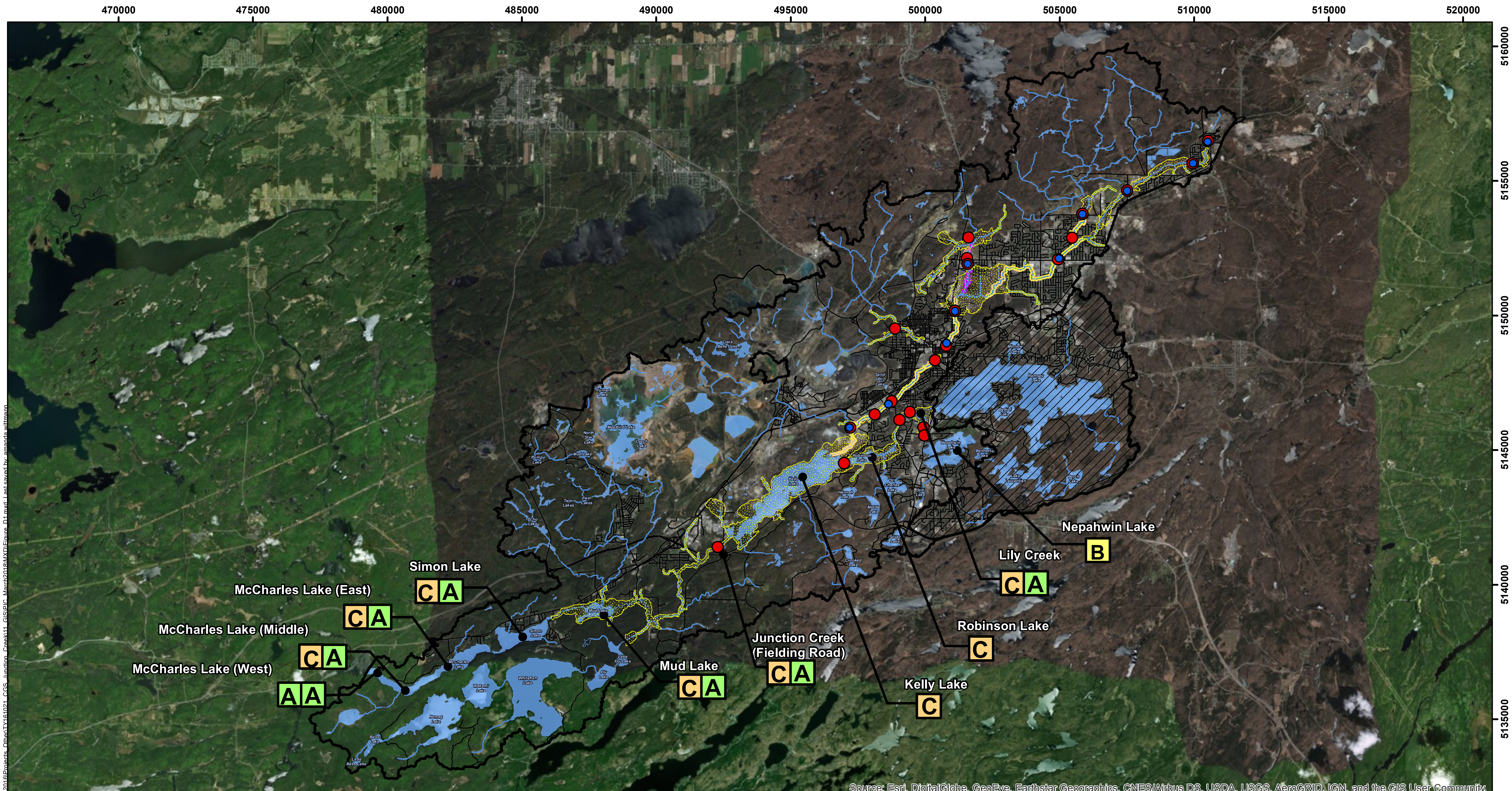


Figure D26: Temporal Trends in Zinc Concentrations within Junction Creek

* The red line represents the PWQO MAC of 0.3 mg/L



LEGEND

- Vale Monthly Water Sampling Sites
- Bioindicator Sampling Sites
- Junction Creek Watershed
- Nickel District Conservation Authority Regulated Floodplain
- Waterbody
- Watercourse
- Roads

Rapid Stream Assessment Technique Results

- Fair
- Good
- Out of Scope

Surface Water Quality Report Card Labelling Key:

A A

Phosphorus Grade — E. Coli Grade

- A Excellent
- B Good
- C Fair
- D Poor
- E Very Poor

0 — 3.75 — 7.5 — 15 — 22.5 — 30 Kilometers

NOTES:
- Imagery Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Datum & Projection: NAD 1983 UTM Zone 17N

amec foster wheeler

Junction Creek Subwatershed Study and Master Plan

Junction Creek Subwatershed Lakes and Creeks Surface Water Quality

DRAFT

PROJECT: TY161021	**FIGURE: D26**
SCALE: 1:135,000	DATE: March 2018