

The Value of Biosolids

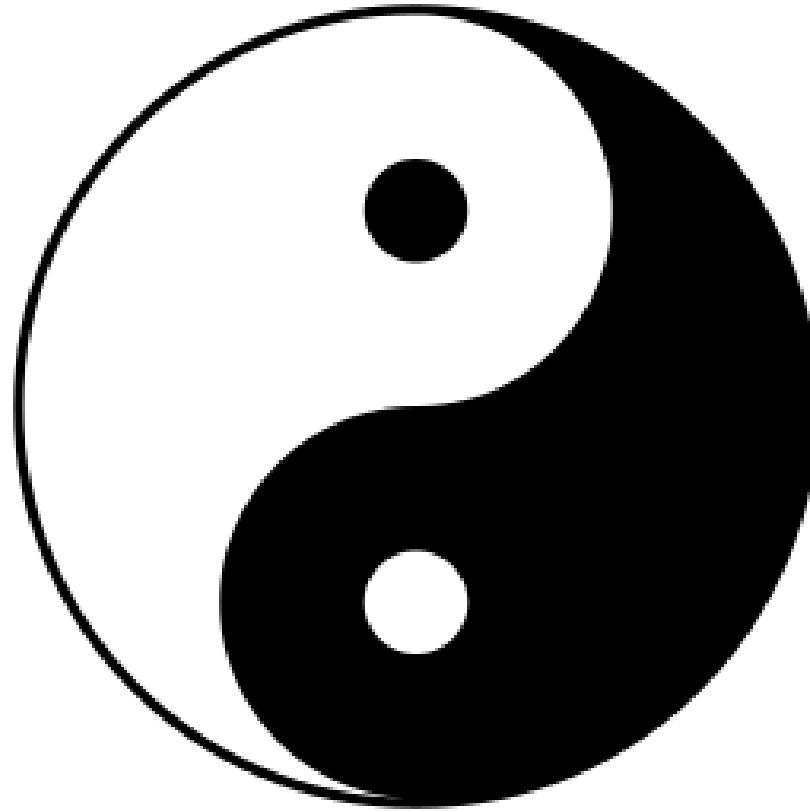
... or the arrow off the page of the engineering diagram



Diagram courtesy of North west Biosolids

Why are we here?

**Our industry
is doing
ok...**



**Our industry
is not doing
ok...**

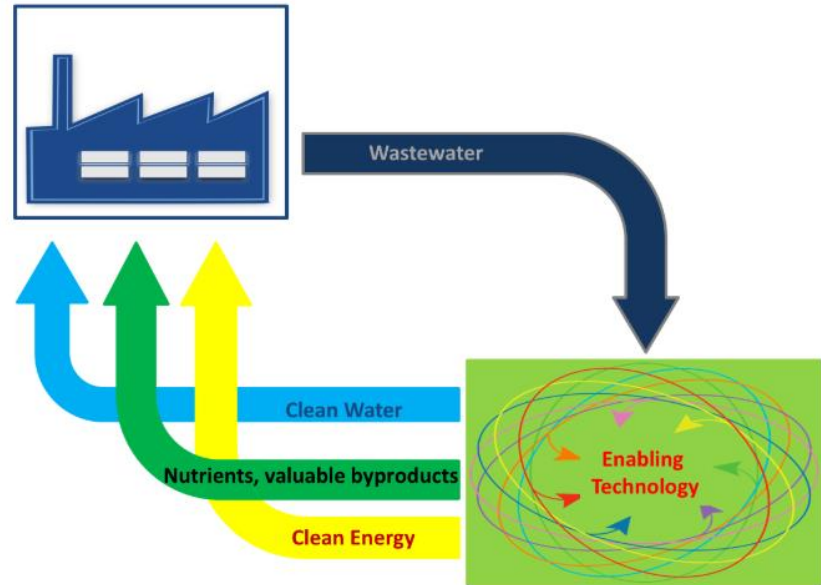
I want us to talk about this for the rest of the day, and
for the next few years...

Biosolids economics

- Did you know our 23 largest WwTPs spend >\$45M processing and trucking biosolids?
- Biosolids makes up 3% of NZs landfilled waste (excluding Mangere / Puketutu)

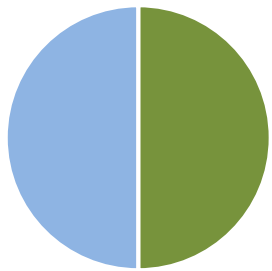
Why Now...

- Pathogens
- Metals
- Circular economy
- Zero waste
- Increased demand for organic carbon rich fertiliser



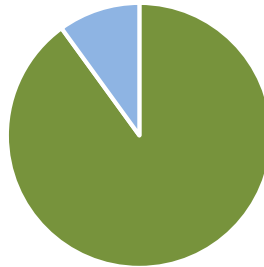
State of Biosolids : did you know...

USA 50%



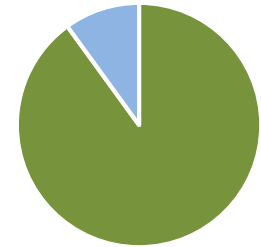
■ Biosolids to Land ■ Other

UK 90%



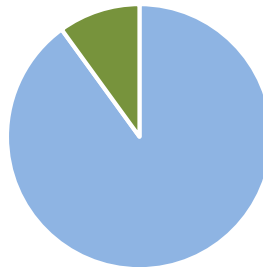
■ Biosolids to Land ■ Other

Australia 90%



■ Biosolids to Land ■ Other

NZ 17%



■ Biosolids to Land ■ Other

Biosolids applied to land as soil conditioner / fertiliser

State of biosolids : why are we different?

- Iwi?
- Dairy farming?
- Landfill cost?
- Landfill regulation?
- Biosolids regulation?

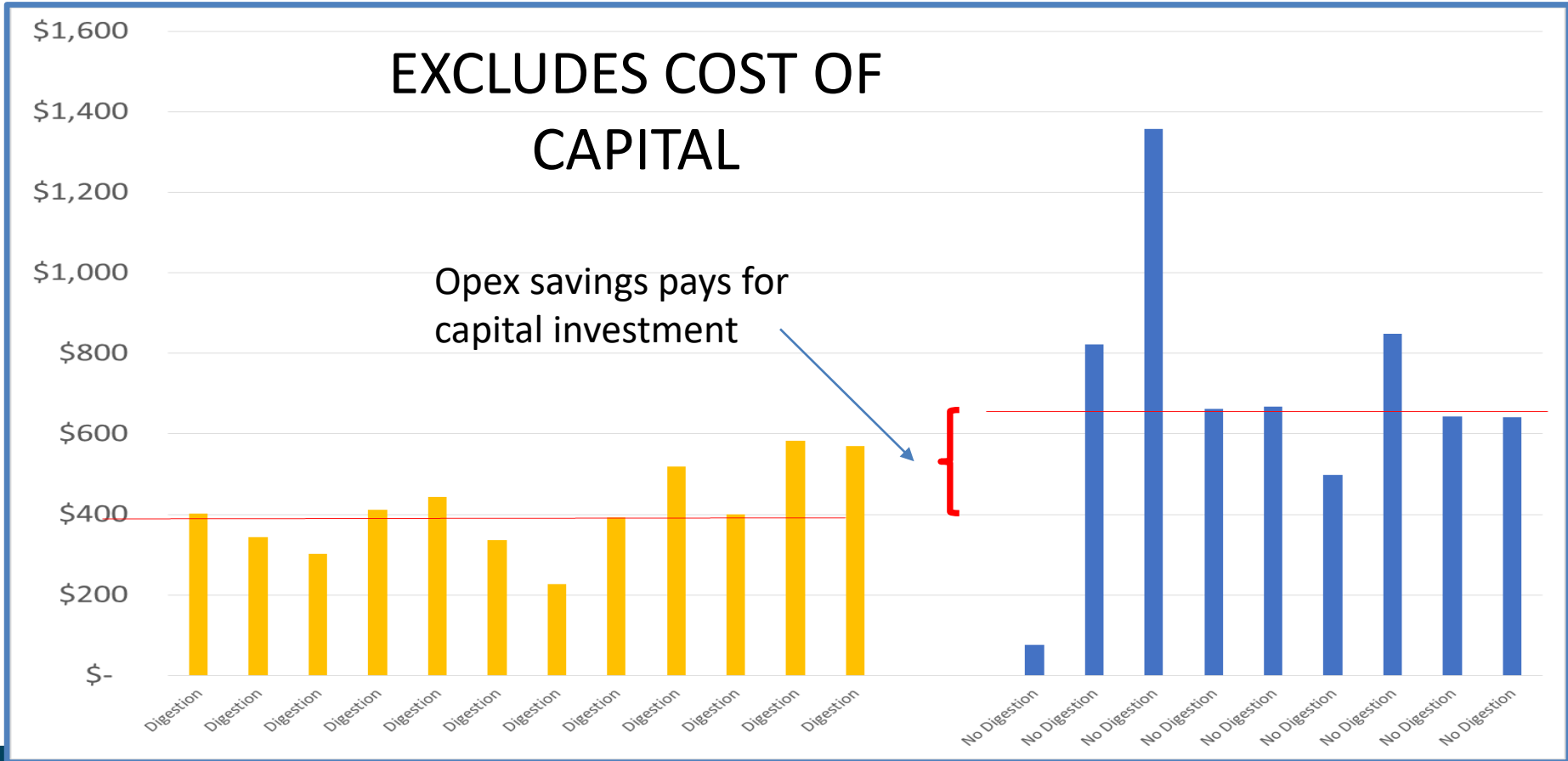
And / Or Maybe...

- We have been good as engineers :
 - Designing, Building, Operating and Optimising Plant and equipment
- Not so good at dealing with externalities



State of biosolids : survey

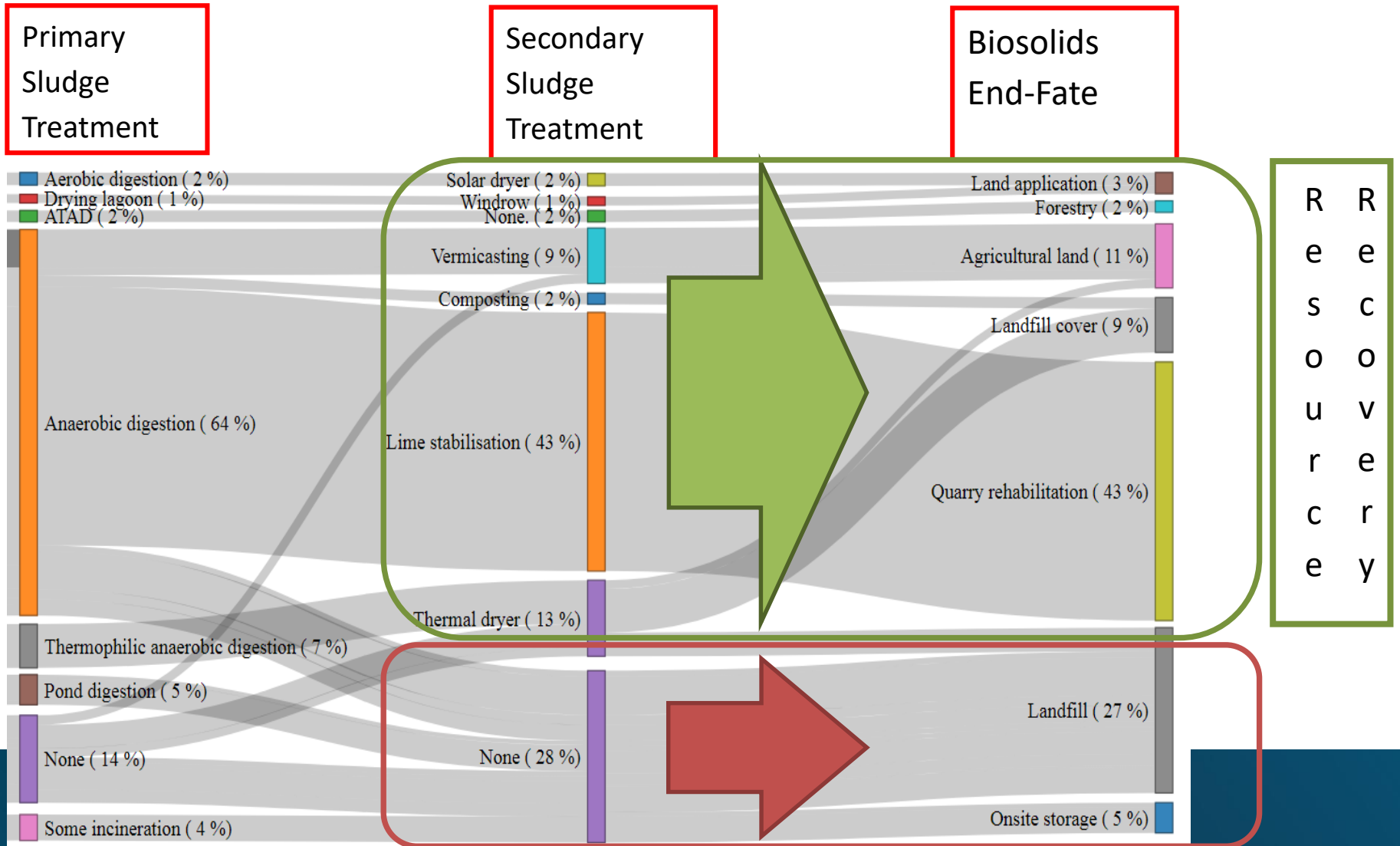
ANZBP survey of WwTPs >25,000 ppl :



So what about digestion?

- Halves bulk volume...
 - Halves transport \$\$\$s
 - Halves landfill \$\$\$s
- Methane for energy (often cost-neutral)
- Low odour product
- But... has a capital cost!

% treatment and end-fates (by dry solids of feed sludge)



Processing and Product

Why is 2^{dry} treatment important?

- Product quality (value)
 - Pathogens (pasteurisation)
 - Metals (blending eg composting)
 - Dry solids (drying, composting, windrowing)

Processing and products

- Low value / high volume
- We operate product factories... what product do our end markets want?
- Employ processes that meet requirements

High Tech

OR

Low Tech



Fertiliser (nitrogen) economics

- Biosolids TN ~ 1.8% Chem Fert TN industry
- Biosolids TP ~ 0.8% Chem Fert TP industry
- Biosolids TN+TP value as chem fert :

\$48 / T

- Biosolids TN+TP value as chem fert :

> \$15M / yr

Digested, 20% DS,
pasteurised



Composted Biosolids Product, Sydney



Thermally Dried
Product > 90%DS



New Plymouth



Taupo



Selwyn Solar Dryer





West Coast Soil Remediation... from this...



... to this...



Kawerau Worm Farm

Processes 100% Rotorua's sludge



The Value of Biosolids

... or the arrow off the page of the engineering diagram

We are very good at managing those things that we control

We are not so good at managing those things that we don't control



Diagram courtesy of North West Biosolids

State of biosolids : why are we different? Revisited

- Iwi? There is support
- Dairy farming? There is support
- Landfill cost? Generally Low
- Landfill regulation? Limited
- Biosolids regulation? New Guidelines

Conclusions

Low biosolids used on land (17%)

-----BUT-----

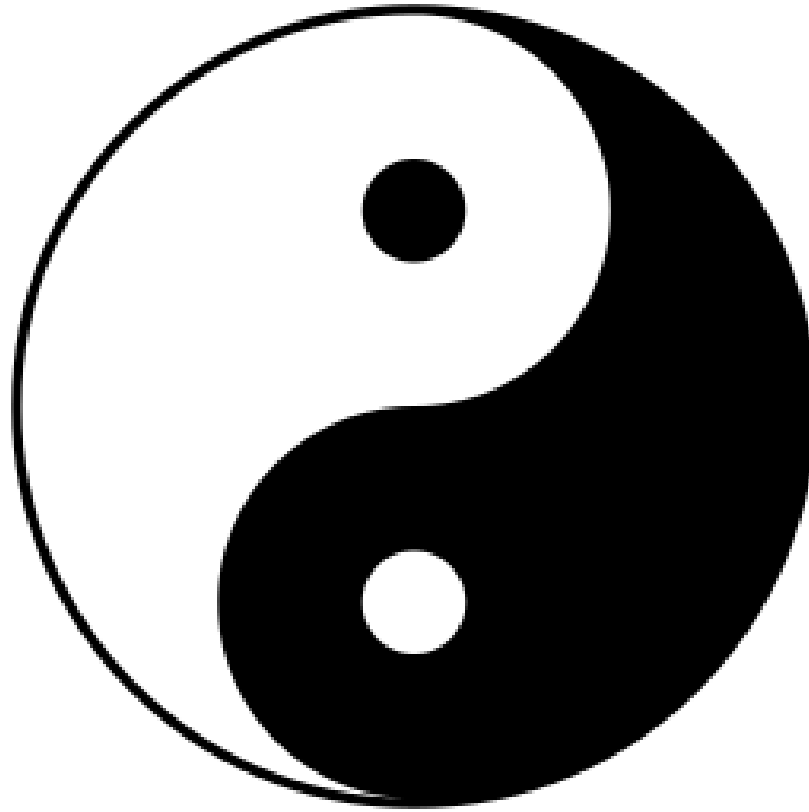
Some excellent industry examples

- Look to rethink what we do
- Learn from each other
- Collaborate with other sectors (WasteMINZ, LTC, etc)

Where does that leave us...

**Our industry
is doing
Well...**

New Plymouth
Nelson
Taupo
Hamilton
Rotorua
Selwyn
Invercargill



**Our industry
is not doing
well...**

I want us to talk about this for the rest of the day, and
for the next few years...

Acknowledgements

- Technical Support : Roseline Klein, Nathaniel Wilson and Shane Morgan of Watercare and Jim Bradley of Stantec
- ANZBP for collaborating with data collection
- All utilities who participated

So what does the future hold???

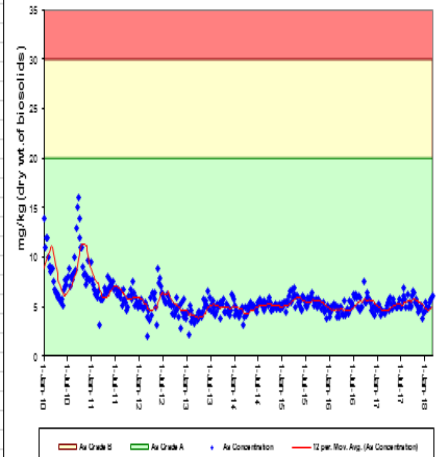


Workshop Agenda

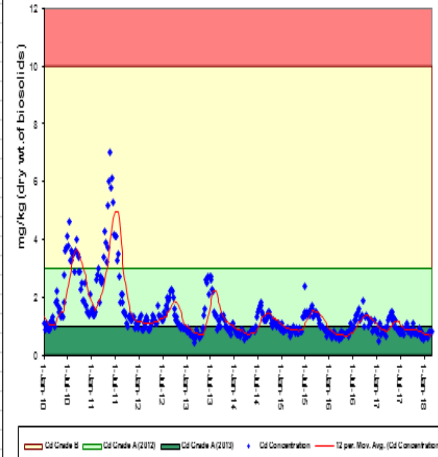
- 2:30 – 3:30pm
 - Intro
 - Taupo experience
 - Guidelines update
- 4:00 – 4:20pm :
 - Lower Nth Island Strategy, Collaboration
 - Waste minimisation funding
- 4:20 – 5:00pm:
 - Way forward (SWOT and SIG?)

Additional Slides

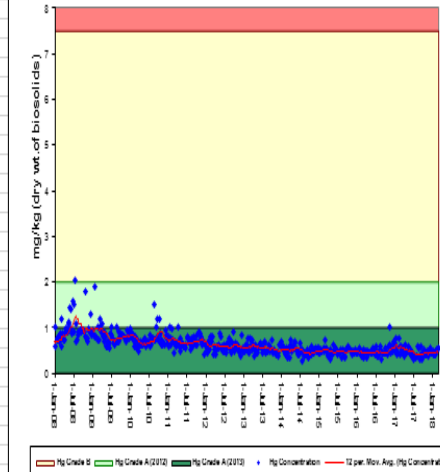
Mangere Biosolids As Concentration



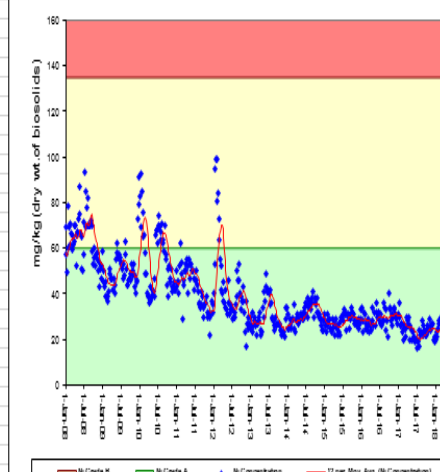
Mangere Biosolids Cd Concentration



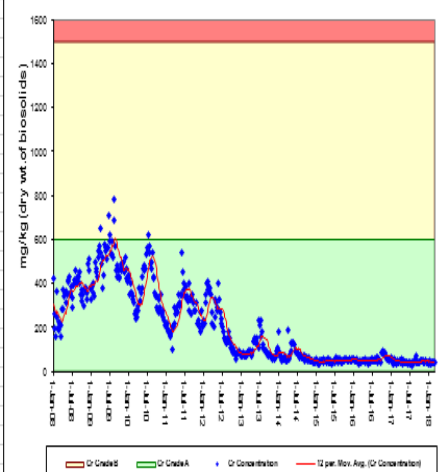
Mangere Biosolids Hg Concentration



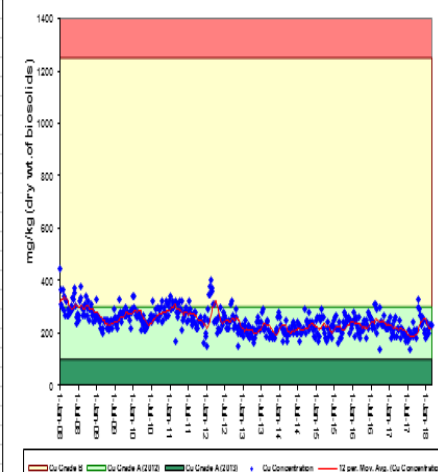
Mangere Biosolids Ni Concentration



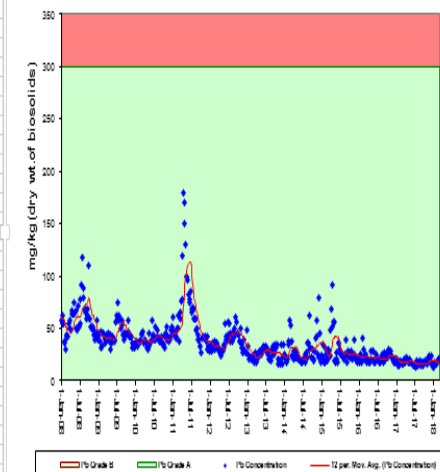
Mangere Biosolids Cr Concentration



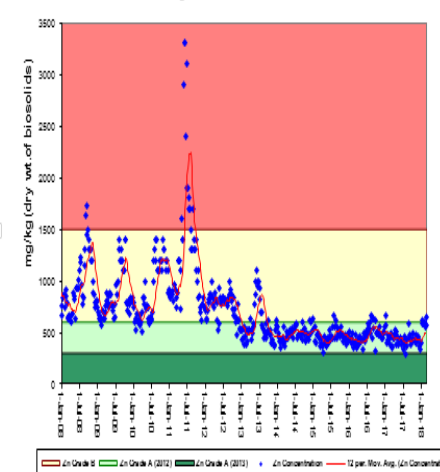
Mangere Biosolids Cu Concentration



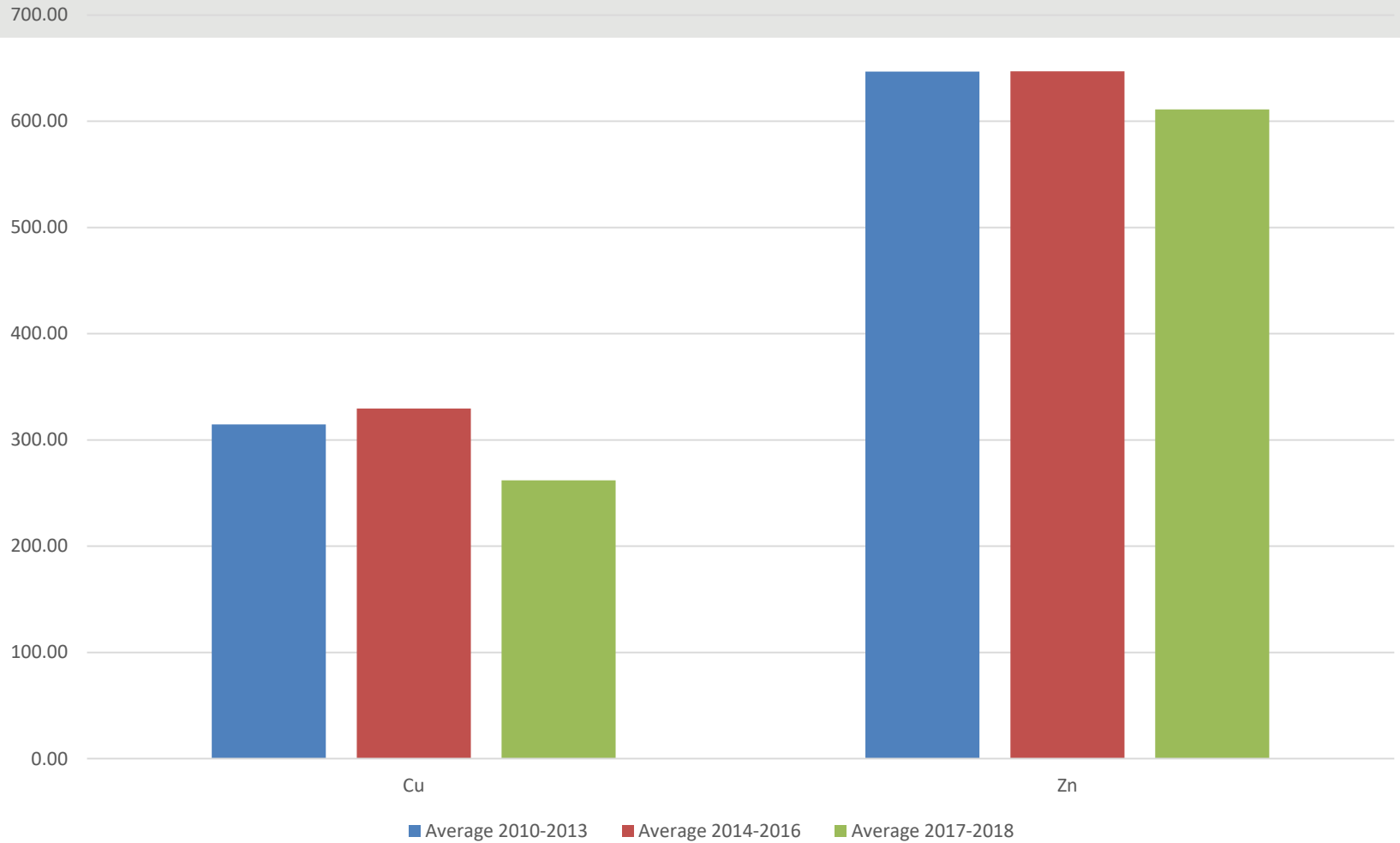
Mangere Biosolids Pb Concentration



Mangere Biosolids Zn Concentration



Metal Reductions 2010-2018



Metal REductions 2010-2018

