LA and WLA Discussion Materials for July 11, 2013 LBWC Meeting

Below is my take away list (in no particular order) from the June 27 TAC meeting of items that need to be addressed in developing potential allocation scenarios via the USGS mass balance model to meet the SR-HC May 1 – September 30, 0.07 mg/l TP target at Parma.

- **Modeling Flowchart** – *Draft Flowchart Attached*
  Identify how the mass balance vs. AQUATOX modeling efforts are being implemented and tied together in the TMDL development. In a nutshell:
  - The mass balance model will: 1) help us determine the allocations necessary to meet the 0.07 target from May 1 – September 30, and 2) help inform the appropriate allocations, if any, from October 1 – April 30 to meet the 150 periphyton target as modeled by AQUATOX
  - The AQUATOX modeling effort will help:
    1. Estimate the probable relationship between TP, periphyton, and a number of other parameters (e.g. sediment) ,
    2. Estimate TP target/allocations to needed meet the 150 periphyton target from October 1 – April 30,
    3. Inform whether the 0.07 target at Parma from May 1 – September 30 will also meet the 150 mg/m2 periphyton target.

- **Allocation Modeling Scenarios Matrix** – *Draft Matrix Attached*
  A modeling scenario matrix could help folks determine cost/benefit analyses, and help facilitate the conversation/decisions among the stakeholders about how the allocations should be derived (e.g. lowest price/pound of TP reduction, equal percentage reduction, timeframe to meet target,…?)

- **Technology Based Limits for Consideration**
  Model breakpoints for technology at 1, 0.5, 0.3 (0.35), 0.1, and 0.07 mg/l

- **Unaccounted/Groundwater Flow**
  Adequately parse out unaccounted vs. groundwater flows.
  - To what extent can we practicably separate from groundwater, the small drains, septic, etc. that aren't specifically accounted for in USGS mass balance model?
    1. This potential refinement of the model needs to be balanced with ability to gather and incorporate data in concert with the relative contribution of these sources.
    2. Should septic (and other) be given a non-point source load allocation if separated from the unaccounted flows category?

- **SR-HC Target for the LBR and Critical Low Flows** – *Draft Flow Duration Curves Attached*
  Clarify the LBR flows needed to meet the SR-HC TMDL target for the LBR of 0.07 mg/l TP.
  - The LBR 0.07 target in the SR-HC was based on average Snake River flow years
    1. SR-HC TMDL page 447: "The SR-HC TMDL target for TP for each tributary is a concentration of less than or equal to 0.07 mg/l TP as measured at the mouth of the tributary and applies from May through September. Because the TP target is concentration-based, actual allowable tributary load allocations under the TMDL are dependent on actual tributary flow and will fluctuate from year to year."
  - EPA advocates that TMDL must also consider critical low flows

- Perhaps design allocations based on tiered approach and flow duration curves for the river (e.g. loads for categories from low flows through high flows)

- **Adjusting the Mass Balance Model for Alternative Flow Scenarios**
  The mass balance model for August was developed for flows of approximately 624 cfs at Parma. As we work to develop allocations under differing flow scenarios, how to address associated changes in associated parameters (e.g. concentrations, loading distributions among sources, etc.) that may differ under alternative flow conditions?

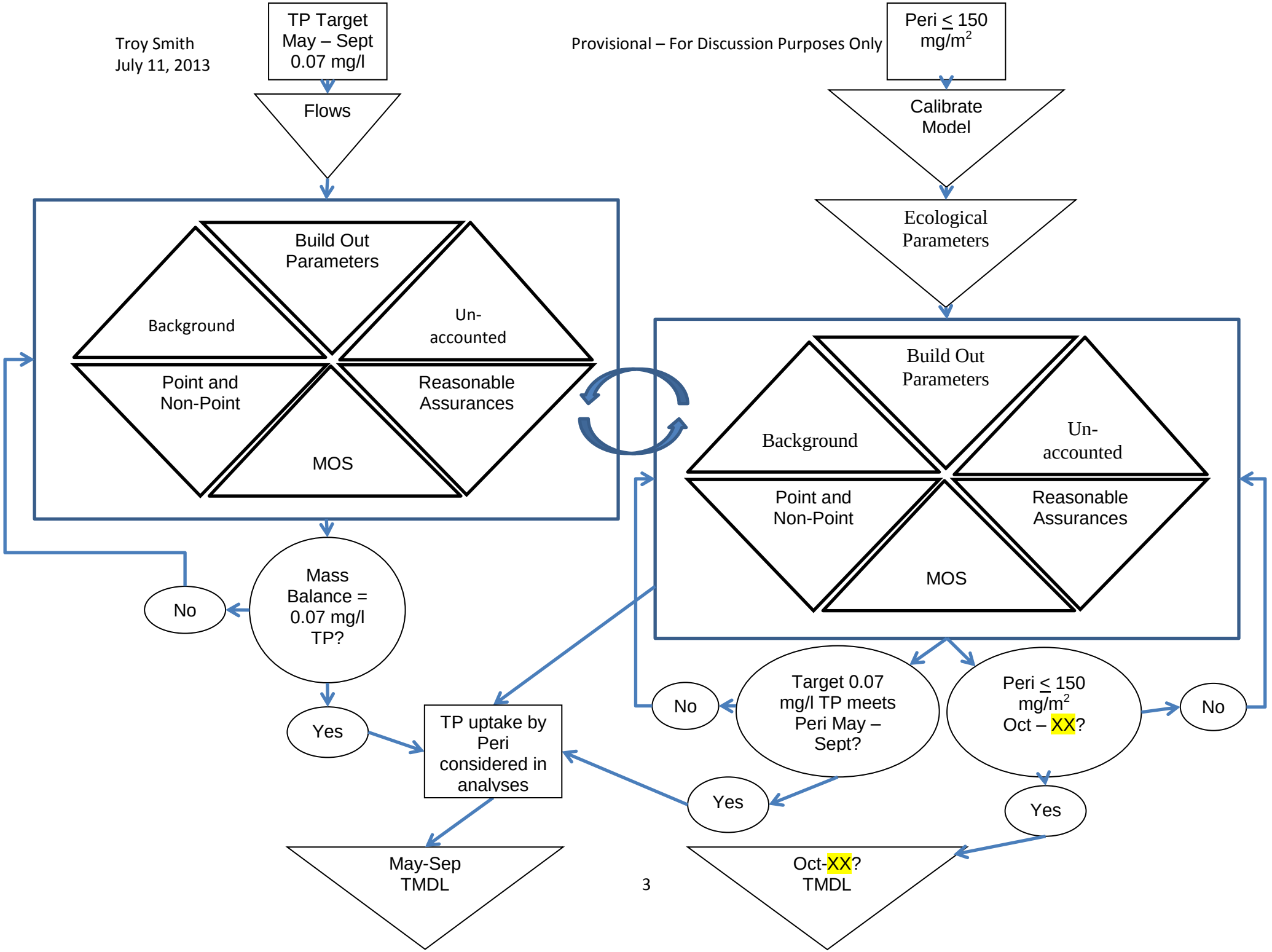
- **Build-out and Implementation Period**
  What is the build out period, and how do we estimate future conditions, populations, etc.?
  - Rely on the best data, best professional judgment, and input from stakeholders and experts to determine these factors,
  - Potential alternatives to an implementation timeline (e.g. identify the end-point targets, point source compliance schedules, review TMDL every five years, and adaptively manage).

- **Defining Reasonable Assurances** – *Draft DEQ TMDL Guidance Language Attached*
  DEQ, EPA, LBWC, and other stakeholders need to maintain consistent inter-communication as we move through the process to identify specific reasonable assurances, as the broad definition doesn't apply well on site-specific basis.
  - EPA Guidelines for Reviewing TMDLS (8. Reasonable Assurances): "When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur…the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards."

- **Trading** – *Draft DEQ TMDL Language Attached*
  DEQ, EPA, LBWC, and other stakeholders should to clearly understand the potential gains and limitations of trading and their relationship to the TMDL. This will be critical for planning how allocations may be addressed through possible trading.
  - DEQ will support trading in the LBR subbasin to the extent practicable,
  - Trading cannot occur in the LBR subbasin until a TMDL is complete,
  - The potential for trading will be identified in the TMDL, but the trading specifics and framework will be developed outside of the TMDL process.

Troy Smith
July 11, 2013

Provisional – For Discussion Purposes Only



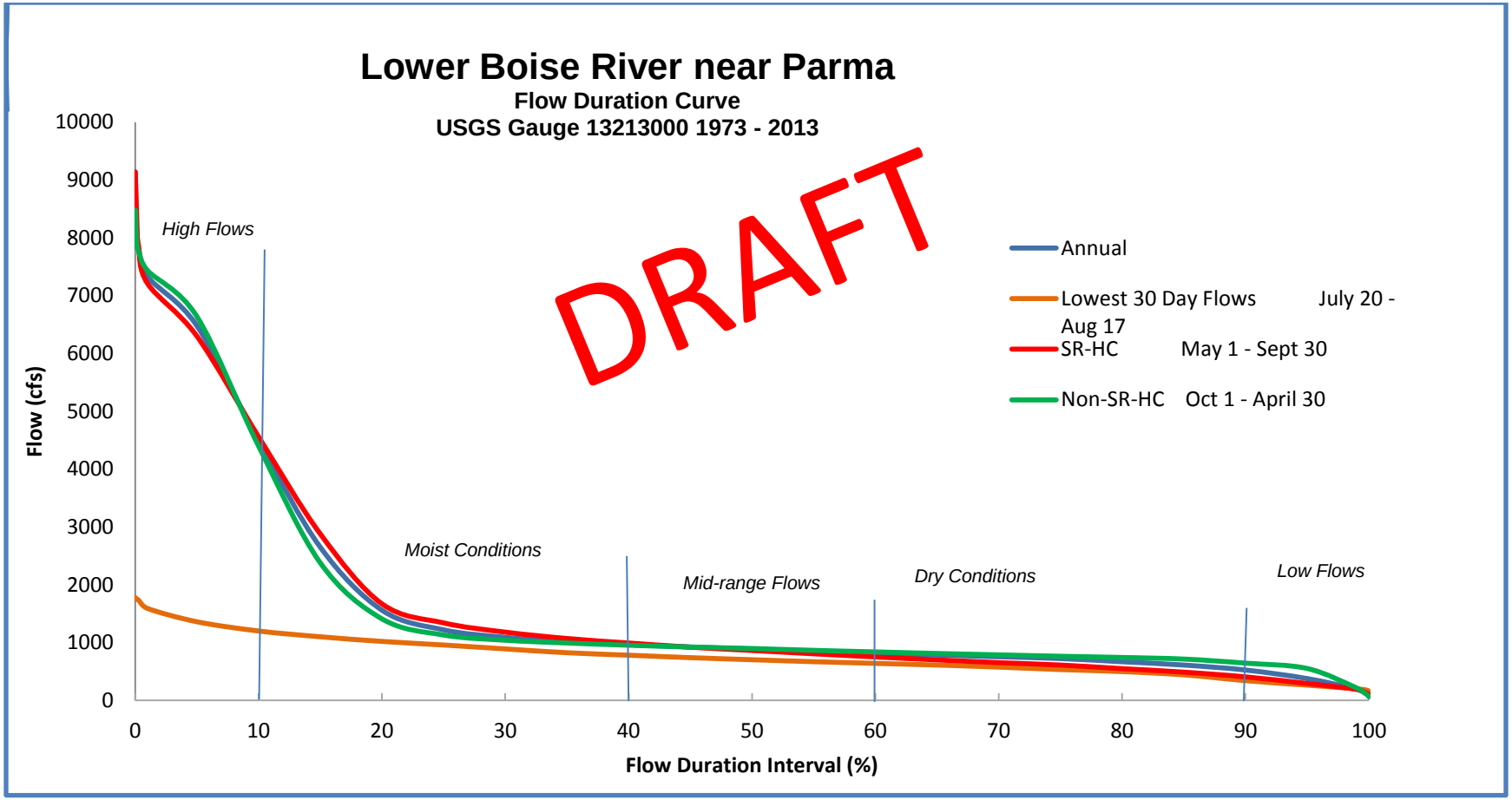
Draft Mass Balance Model and Allocation Matrix
July 11, 2013

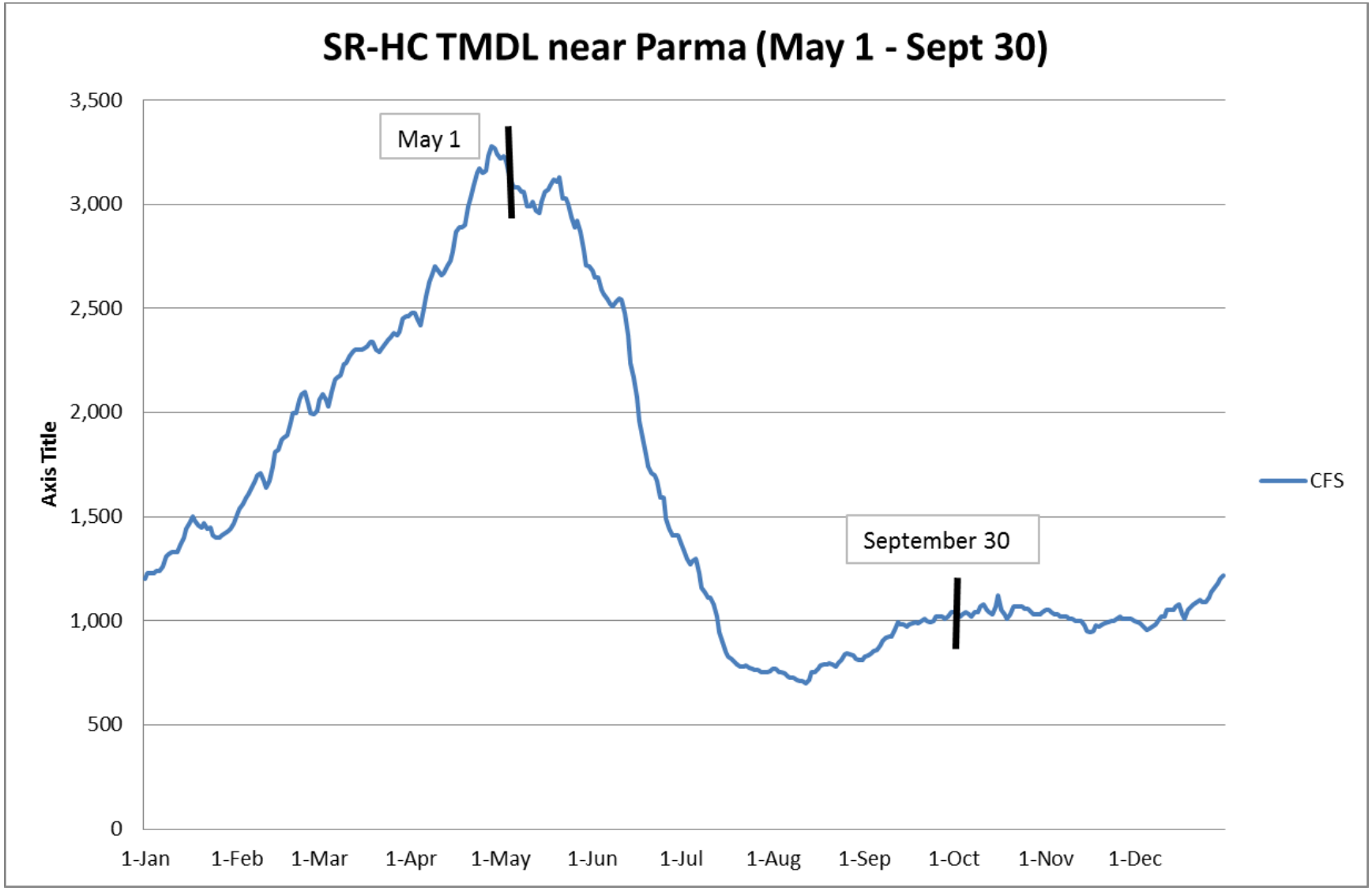
Scenario	Flows	Background (mg/l)	+	Point or mass equivalent	+	Non-Point	+	Ground water	+	Unaccounted	+	Stormwater, Other	=	TP Target (mg/l)
1a	Low	~0.02		1.0		A		AA		AAA		?		0.07 ??
2a	Dry													
3a	Moderate													
4a	Wet													
5a	High													
1b	Low	~0.02		0.5		B		BB		BBB		?		0.07 ??
2b	Dry													
3b	Moderate													
4b	Wet													
5b	High													
1c	Low	~0.02		0.3(5)		C		CC		CCC		?		0.07 ??
2c	Dry													
3c	Moderate													
4c	Wet													
5c	High													
1d	Low	~0.02		0.1		D		DD		DDD		?		0.07 ??
2d	Dry													
3d	Moderate													
4d	Wet													
5d	High													
1e	Low	~0.02		0.07		E		EE		EEE		?		0.07 ??
2e	Dry													
3e	Moderate													
4e	Wet													
5e	High													

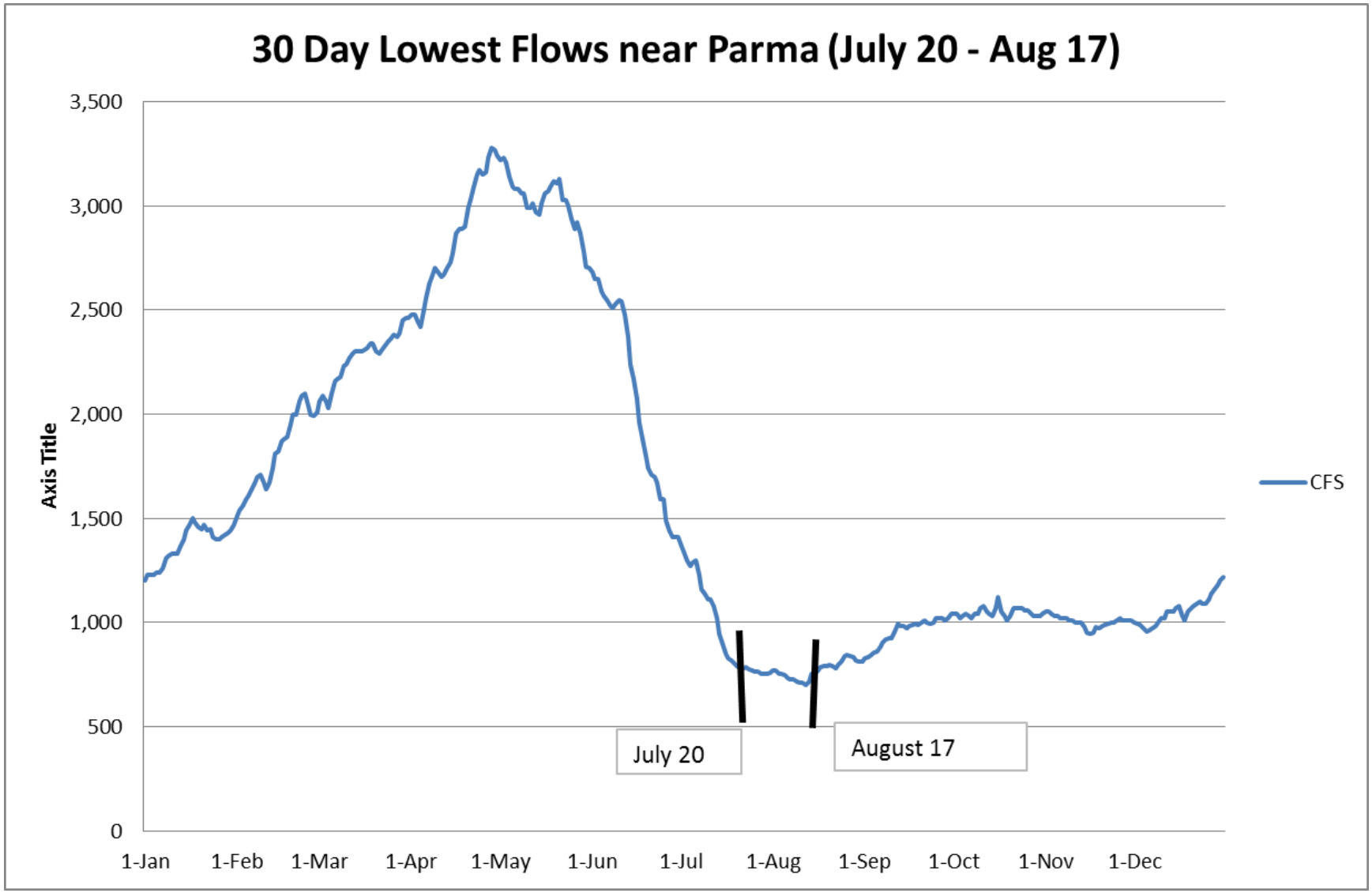
Flow Duration Curves for the Lower Boise River January 1973 – December 2012

Lower Boise River Near Parma
Flow Duration Data
From January 1973 to January 2013

		Annual	Low Flows	SR-HC	Non-SR-HC
		Jan 73 - Jan 13	Lowest 30 Day Flows July 20 - Aug 17	SR-HC May 1 - Sept 30	Non-SR-HC Oct 1 - April 30
Percentile	Interval				
0.0%	0.0	9140	1780	9140	8480
0.1%	0.1	7967	1750	8264	7900
0.3%	0.3	7828	1734	7857	7776
1.0%	1.0	7330	1590	7210	7435
5.0%	5.0	6480	1360	6300	6640
10.0%	10.0	4485	1200	4560	4400
15.0%	15.0	2650	1100	2880	2380
20.0%	20.0	1560	1020	1670	1410
25.0%	25.0	1220	958	1340	1130
30.0%	30.0	1090	890	1180	1040
35.0%	35.0	1010	824	1070	992
40.0%	40.0	964	781	992	954
45.0%	45.0	923	739	920	923
50.0%	50.0	887	703	863	897
55.0%	55.0	849	669	806	865
60.0%	60.0	814	640	752	838
65.0%	65.0	784	611	700	811
70.0%	70.0	754	575	652	787
75.0%	75.0	723	533	611	763
80.0%	80.0	668	498	549	742
85.0%	85.0	611	441	488	715
90.0%	90.0	525	341	406	644
95.0%	95.0	377	263	292	552
99.0%	99.0	194	201	191	216
99.9%	99.9	102	176	122	96
100.0%	100.0	66	158	108	66


Lower Boise River near Parma
Flow Duration Curve
USGS Gauge 13213000 1973 - 2013
DRAFT
Flow (cfs)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
High Flows
Moist Conditions
Mid-range Flows
Dry Conditions
Low Flows
0
10
20
30
40
50
60
70
80
90
100
Flow Duration Interval (%)
Annual
Lowest 30 Day Flows July 20 - Aug 17
SR-HC May 1 - Sept 30
Non-SR-HC Oct 1 - April 30


SR-HC TMDL near Parma (May 1 - Sept 30)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Axis Title
May 1
September 30
CFS
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec


30 Day Lowest Flows near Parma (July 20 - Aug 17)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Axis Title
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
July 20
August 17
CFS

Time-series: Daily s GO s 0-05- GO e-series: Daily GO

00060, Discharge, cubic feet per second,

Day of month	daily mean values for each day for 36 - 37 years of record in, cfs (Calculation Period 1970-10-01 -> 2012-											
	CFS	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1	1,200	1,510	2,060	2,480	3,220	2,680	1,370	767	826	1,040	1,050	1,000
2	1,230	1,540	2,090	2,480	3,230	2,650	1,340	767	836	1,040	1,050	994
3	1,230	1,560	2,060	2,450	3,210	2,650	1,300	756	843	1,020	1,040	990
4	1,230	1,590	2,030	2,420	3,140	2,590	1,270	754	855	1,030	1,030	973
5	1,240	1,610	2,100	2,500	3,090	2,570	1,290	749	862	1,040	1,030	957
6	1,240	1,640	2,160	2,560	3,080	2,550	1,300	731	880	1,030	1,020	960
7	1,260	1,670	2,170	2,630	3,080	2,520	1,230	726	904	1,020	1,020	972
8	1,310	1,700	2,180	2,670	3,060	2,510	1,160	726	919	1,040	1,020	983
9	1,320	1,710	2,230	2,700	3,060	2,530	1,140	718	926	1,040	1,010	1,000
10	1,330	1,670	2,240	2,680	2,990	2,550	1,110	711	925	1,070	1,010	1,020
11	1,330	1,640	2,270	2,660	2,990	2,540	1,110	710	955	1,080	1,000	1,020
12	1,330	1,670	2,290	2,670	3,010	2,480	1,080	700	996	1,050	998	1,050
13	1,370	1,740	2,300	2,700	2,970	2,370	1,020	714	984	1,040	1,000	1,050
14	1,400	1,810	2,300	2,730	2,960	2,240	947	751	985	1,030	977	1,050
15	1,440	1,820	2,300	2,770	3,010	2,170	896	754	975	1,070	950	1,070
16	1,470	1,870	2,310	2,870	3,060	2,070	852	772	981	1,120	945	1,080
17	1,500	1,880	2,320	2,890	3,070	1,960	830	783	986	1,050	953	1,030
18	1,480	1,890	2,340	2,890	3,090	1,880	817	792	993	1,030	977	1,010
19	1,460	1,950	2,340	2,900	3,120	1,800	804	792	990	1,010	973	1,050
20	1,450	2,000	2,300	2,990	3,110	1,740	790	795	998	1,030	982	1,070
21	1,470	2,000	2,290	3,030	3,130	1,710	780	789	1,010	1,070	987	1,080
22	1,440	2,060	2,310	3,090	3,030	1,700	778	778	1,000	1,070	992	1,090
23	1,450	2,090	2,330	3,150	3,030	1,670	783	795	995	1,070	1,000	1,100
24	1,410	2,100	2,350	3,170	3,000	1,590	774	814	1,000	1,070	1,000	1,090
25	1,400	2,040	2,360	3,150	2,940	1,590	771	839	1,020	1,060	1,010	1,090
26	1,400	2,000	2,380	3,160	2,890	1,490	766	846	1,020	1,060	1,020	1,110
27	1,410	1,990	2,370	3,230	2,920	1,440	763	841	1,020	1,040	1,010	1,140
28	1,420	2,010	2,390	3,280	2,870	1,410	756	835	1,010	1,030	1,010	1,160
29	1,430	2,540	2,450	3,270	2,780	1,410	751	819	1,020	1,030	1,010	1,180
30	1,440		2,460	3,240	2,710	1,410	756	813	1,040	1,030	1,010	1,200
31	1,470		2,460		2,700		758	813		1,040		1,220

Reasonable Assurance Language Taken from the 2013 DEQ TMDL Addendum Template (to be used for the LBR TP TMDL)

Reasonable Assurance

Identify the agencies and entities who are DMAs who will help with implementation, opportunities DEQ and the WAG are committed to following up on, financial resources from 319 or USDA programs, and any other financial commitments in the watershed. Provide enough detail about how nonpoint sources and point sources will achieve the reductions called for.

If the WLA relies on the LA, you need to describe how or why the nonpoint sources will comply with their load reductions.

Pollutant Trading Language Taken from the 2013 DEQ TMDL Addendum Template (to be used for the LBR TP TMDL)

Pollutant Trading

Pollutant trading (also known as water quality trading) is a contractual agreement to exchange pollution reductions between two parties. Pollutant trading is a business-like way of helping to solve water quality problems by focusing on cost-effective, local solutions to problems caused by pollutant discharges to surface waters. Pollutant trading is one of the tools available to meet reductions called for in a TMDL where point and nonpoint sources both exist in a watershed.

The appeal of trading emerges when pollutant sources face substantially different pollutant reduction costs. Typically, a party facing relatively high pollutant reduction costs compensates another party to achieve an equivalent, though less costly, pollutant reduction.

Pollutant trading is voluntary. Parties trade only if both are better off because of the trade, and trading allows parties to decide how to best reduce pollutant loadings within the limits of certain requirements.

Pollutant trading is recognized in Idaho's water quality standards at IDAPA 58.01.02.055.06. DEQ allows for pollutant trading as a means to meet TMDLs, thus restoring water quality limited water bodies to compliance with water quality standards. DEQ's *Water Quality Pollutant Trading Guidance* sets forth the procedures to be followed for pollutant trading (DEQ 2010).

Trading Components

The major components of pollutant trading are trading parties (buyers and sellers) and credits (the commodity being bought and sold). Ratios are used to ensure environmental equivalency of trades on water bodies covered by a TMDL. All trading activity must be recorded in the trading database by DEQ or its designated party.

Both point and nonpoint sources may create marketable credits, which are a reduction of a pollutant beyond a level set by a TMDL:

- Point sources create credits by reducing pollutant discharges below NPDES effluent limits set initially by the wasteload allocation.
- Nonpoint sources create credits by implementing approved BMPs that reduce the amount of pollutant runoff. Nonpoint sources must follow specific design, maintenance, and monitoring requirements for that BMP; apply discounts to credits generated, if required; and provide a water quality contribution to ensure a net environmental benefit. The water quality contribution also ensures the reduction (the marketable credit) is surplus to the reductions the TMDL assumes the nonpoint source is achieving to meet the water quality goals of the TMDL.

Watershed-Specific Environmental Protection

Trades must be implemented so that the overall water quality of the water bodies covered by the TMDL are protected. To do this, hydrologically based ratios are developed to ensure trades

between sources distributed throughout TMDL water bodies result in environmentally equivalent or better outcomes at the point of environmental concern. Moreover, localized adverse impacts to water quality are not allowed.

Trading Framework

For pollutant trading to be authorized, it must be specifically mentioned within a TMDL document. After adoption of an EPA-approved TMDL, DEQ, in concert with the WAG, must develop a pollutant trading framework document. The framework would mesh with the implementation plan for the watershed that is the subject of the TMDL. The elements of a trading document are described in DEQ's pollutant trading guidance (DEQ 2010).