From: Kunysz,Kathy

Sent: Friday, July 10, 2015 11:31 AM

To: Ti,Mike N

Subject: FW: MWD IRP UPDATE: RAYMOND BASIN GROUNDWATER HOMEWORK

Attachments: Pasadena Projections for MWD 2015 IRP.xlsx

From: Takara, Gary [mailto:gtakara@cityofpasadena.net]

Sent: Thursday, June 18, 2015 4:07 PM

To: Kunysz, Kathy

Cc: Sumi, David H; Hacker, Matthew D

Subject: RE: MWD IRP UPDATE: RAYMOND BASIN GROUNDWATER HOMEWORK

Hi Kathy:

Here are PWP's projections. Let me know if you have any questions.

Regards
Gary Takara
Pasadena Water and Power
150 South Los Robles Avenue, Suite 200
Pasadena, California, 91101
(626) 744-3729
gtakara@cityofpasadena.net

From: Kunysz,Kathy [mailto:kkunysz@mwdh2o.com]

Sent: Tuesday, June 09, 2015 11:44 AM

To: Boman, Brad; Takara, Gary; ddrugan@fmwd.com; Nina Jazmadarian (nina.jaz@fmwd.com.); Shane Chapman (shane@usgvmwd.org; garry.hofer@amwater.com; Tony Zampiello (tony@watermaster.org); Kelly Gardner (kelly@watermaster.org)

Subject: MWD IRP UPDATE: RAYMOND BASIN GROUNDWATER HOMEWORK

Dear Member Agency and Groundwater Managers and Staff,

Attached are the excel spreadsheets for your agency and groundwater basin showing draft projections for groundwater production and projections of sources and amounts of groundwater recharge in normal and multiple-dry-year situations. This information is being used in Metropolitan's 2015 update of its Integrated Resources Plan. Also attached is a slide from the IRP Member Agency Workshop #1 for Groundwater held on May 27. The slide shows a draft projection of the total regional deficit of groundwater recharge under the multiple-dry-year scenario. As part of this IRP Update, it is our objective to finalize this deficit amount with your input, and to identify strategies and policies to address it. Metropolitan is seeking to ensure that groundwater production is sustainable—groundwater is a significant element of regional water supply reliability.

Where there are multiple member agencies overlying a groundwater basin, we have sent the spreadsheets to all overlying member agencies and to the groundwater basin manager. The intent is for a coordinated review. Please review your spreadsheet(s) carefully and provide corrections to the production and recharge projections in RED. Please also list the assumption/rationale for the correction in RED. When reviewing the groundwater production

projections, please note that Metropolitan has assigned groundwater production within a Metropolitan member agency's service area to that member agency. Also, the data is shown by calendar year.

Please return the modified spreadsheets to David Sumi with copy to Kathy Kunysz and Matt Hacker by Monday, June 22. If you have questions, please call Kathy Kunysz (213-217-6272) or Matt Hacker (213-217-6756). We will report the adjusted projections at an IRP workshop later this summer.

Thank you, Kathy Kunysz Program Manager, Groundwater Issues Metropolitan Water District of Southern California

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Groundwat	er								Averag	e																																	\Box			
Agency	Type	IMP/EXP	Basin/Reservoir	2009	2010	2011	201	2 201	2009-20	13 2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Pasadena	GW	IMP	Unknown Basin	1,005	231	216	23	2 8	3	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pasadena	GW	OWN	Raymond Basin	12,064	9,559	12,600	13,60	2 12,355	12,0	36	11,900	11,800	11,800	1,800 1	11,800	11,800	12,500	12,500	12,500	12,500	12,500	13,000	13,000	13,000	13,000	13,000	13,300	13,300	13,300	13,300	13,300	13,500	13,500	13,500	13,500	13,500	13,700	13,700	13,700	13,700	13,700	13,700	13,700	13,700	13,700	13,700
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Groundwater Pro	niection								_	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Projection										12,000		11 800	11 900	1 800 1	11 900	11 800	12 500	12 500	12 500	12.500	12 500	12,000	12,000	12 000	12 000	12.000	12 200	12 200	12 200	12 200	12 200	12 500	12 500	12 500	12 500	12 500	12 700	12 700	12 700	12 700	12 700	12 700	12 700			13,700
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Pasadena	IMPORT	OWN	Raymond Basin	Assume 0.							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pasadena	STORM	OWN	Raymond Basin	Average 198	86-2005						368	600	400	600 :	1,600	2,000	2,200	2,600	2,700	3,000	3,000	3,300	3,300	3,300	3,500	3,500	3,500	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700
Pasadena	REC	OWN	Raymond Basin	No reycled v	water for	Pasadena.	1				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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Multiple Dry Ye	ar (actual	2012-2014)				1																																							1
Pasadena	IMPORT		Raymond Basin	Assume 0.			1				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pasadena	STORM	OWN	Raymond Basin	Average 201	12-2014		-				500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500
Pasadena	REC	OWN	Raymond Basin	No recycled		r Pasadena	-1		-		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- Note (06.18.2015):

 1 Oato in yellow hiphiliphed cells reflects PWP's projections.

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 2 Iccol groundwater production assumes the water table remains low (status quo) for the next 5 years. Thereafter, the projections assumes a shift towards the long-term hydrological cycle gradually restoring the water table. As a result of this assumption, well performance increases including restoring one or more wells that are currently off-line due to low water table.

 3 Spreading flavors are cartual pumping credits, which accounts for the volume of recharge multiplied by a percentage. The figures that were originally provided by MWD (9,503 AF) appears to be recharge volume which is greater than the actual credits received following application of the spreading factors.

 4 Spreading recharge over time assumes an increase to reflect the long-term hydrological cycle.

 5 PWP is in the design phase for the Arroyo Seco Conyon Project. The benefits include increasing local stormwater recharge. Construction will interrupt winter recharge for 2017 and 2018. For these two years, spreading anly reflects operation at Eaton Conyon.

 - 6 PWP is currently working through the environmental for a non-potable water project. The project, If funding is secured, anticipates a start up of around 2018/2019. The projections do not include recharge with non-potable water although recharge is analyzed in the EIR at a program level.
 - 7 Dry year spreading uses the average of 2013, 2014, and 2015 recent dry year conditions.

Pasadena Projections for MWD 2015 IRP.xlsx