

DEFICIENCY ANALYSIS RESULTS EXISTING AND UGB BUILD-OUT CONDITIONS

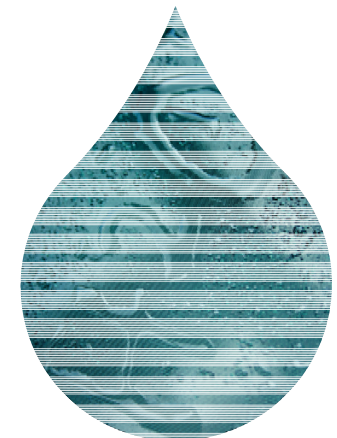
Optimized Collection System Master Plan

City of Bend

SIAG

July 11, 2013

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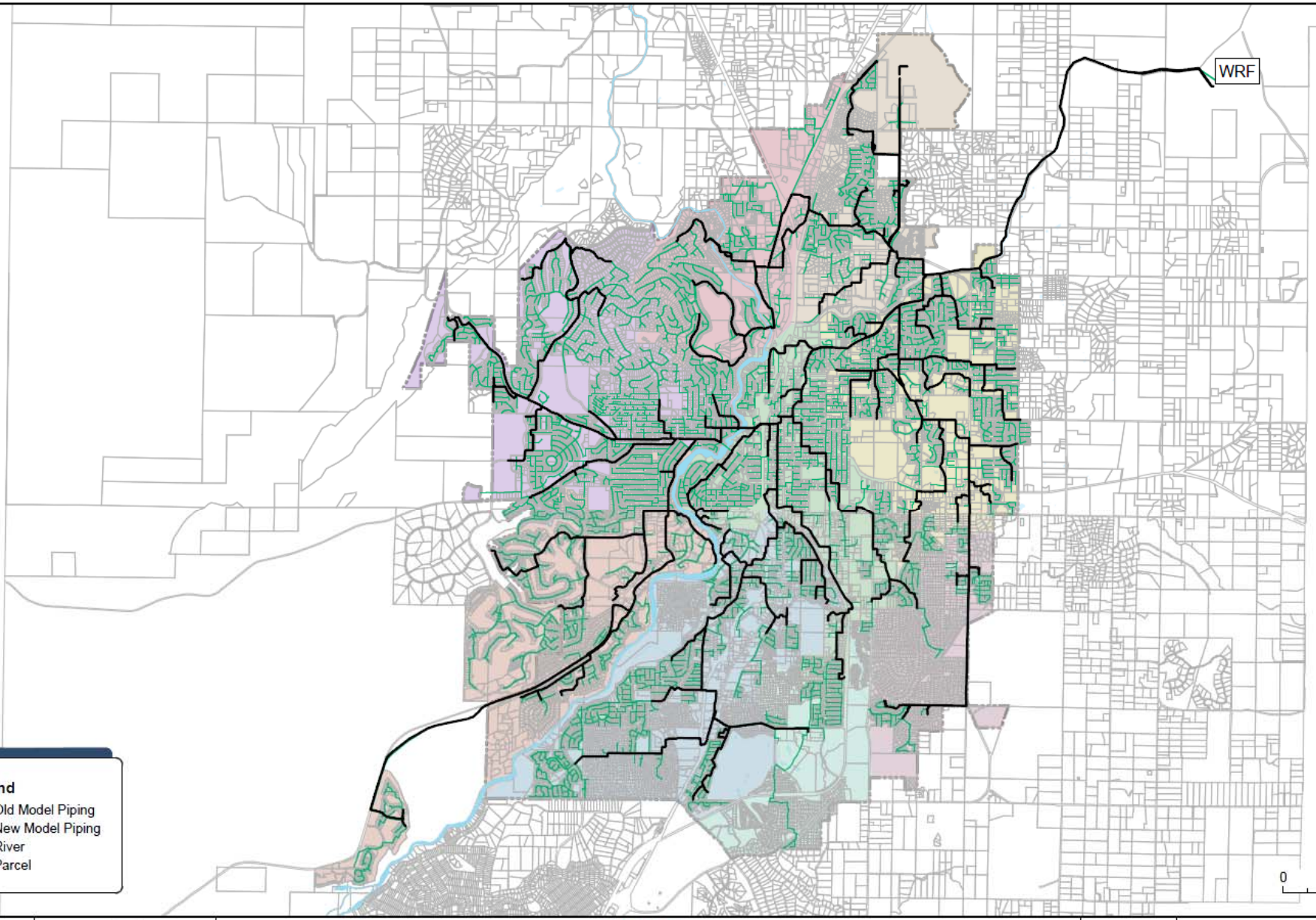


MSA Murray, Smith & Associates, Inc.
Engineers/Planners

PURPOSE OF PRESENTATION

- ◆ 2007 CSMP Model & 2013 CSMP Model
- ◆ Condition Assessment
- ◆ Current Deficiencies
- ◆ Future Deficiencies
- ◆ Varying Rainfall Response
 - Staff Recommendation
- ◆ Comparison of Addendum 4 and Updated Results
- ◆ Next Steps

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Legend

- Old Model Piping
- New Model Piping
- River
- Parcel

0 1 Miles



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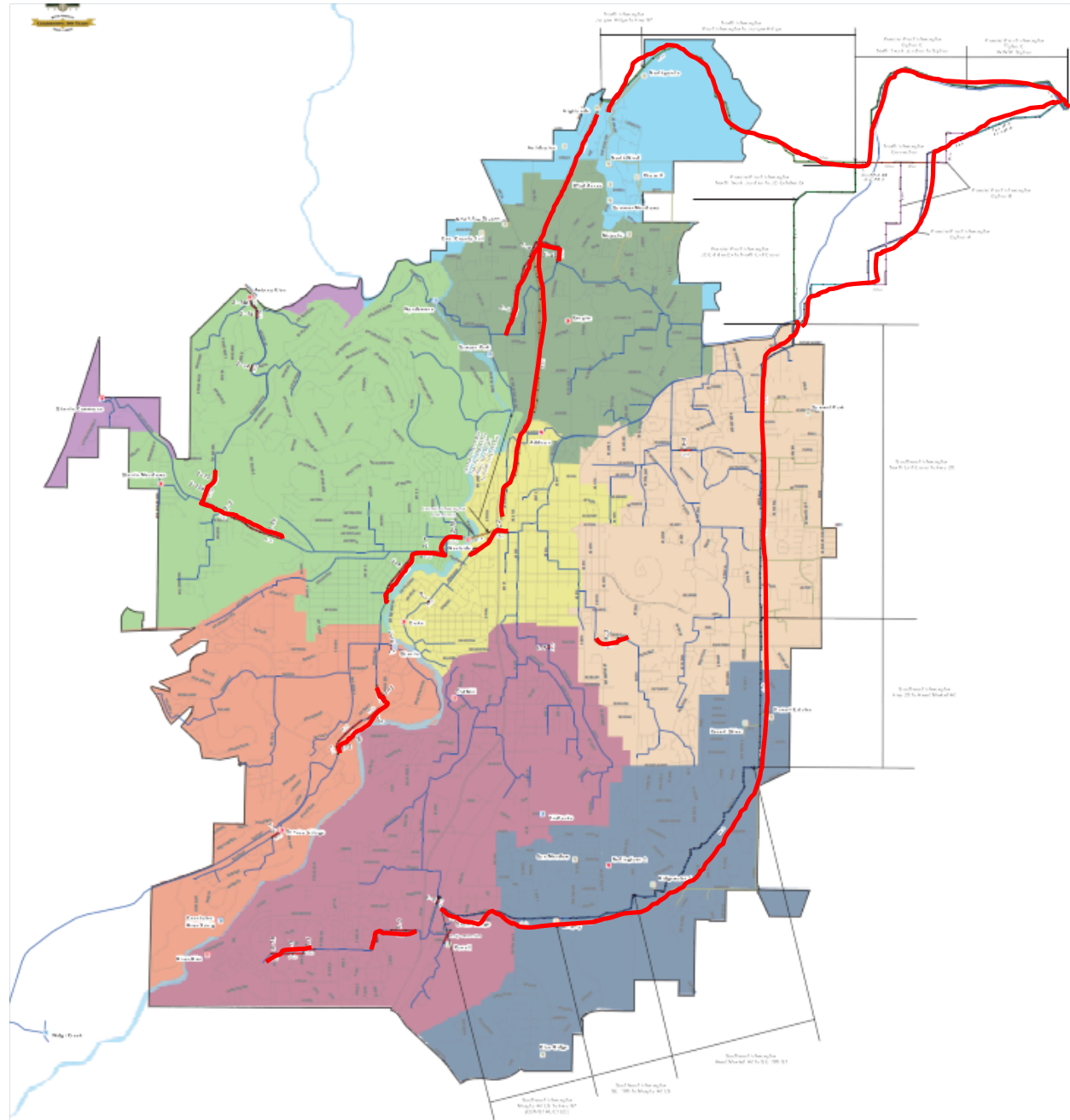
City of Bend Collection System Master Plan

WORK IN PROGRESS - SUBJECT TO CHANGE



Model Extent Comparison

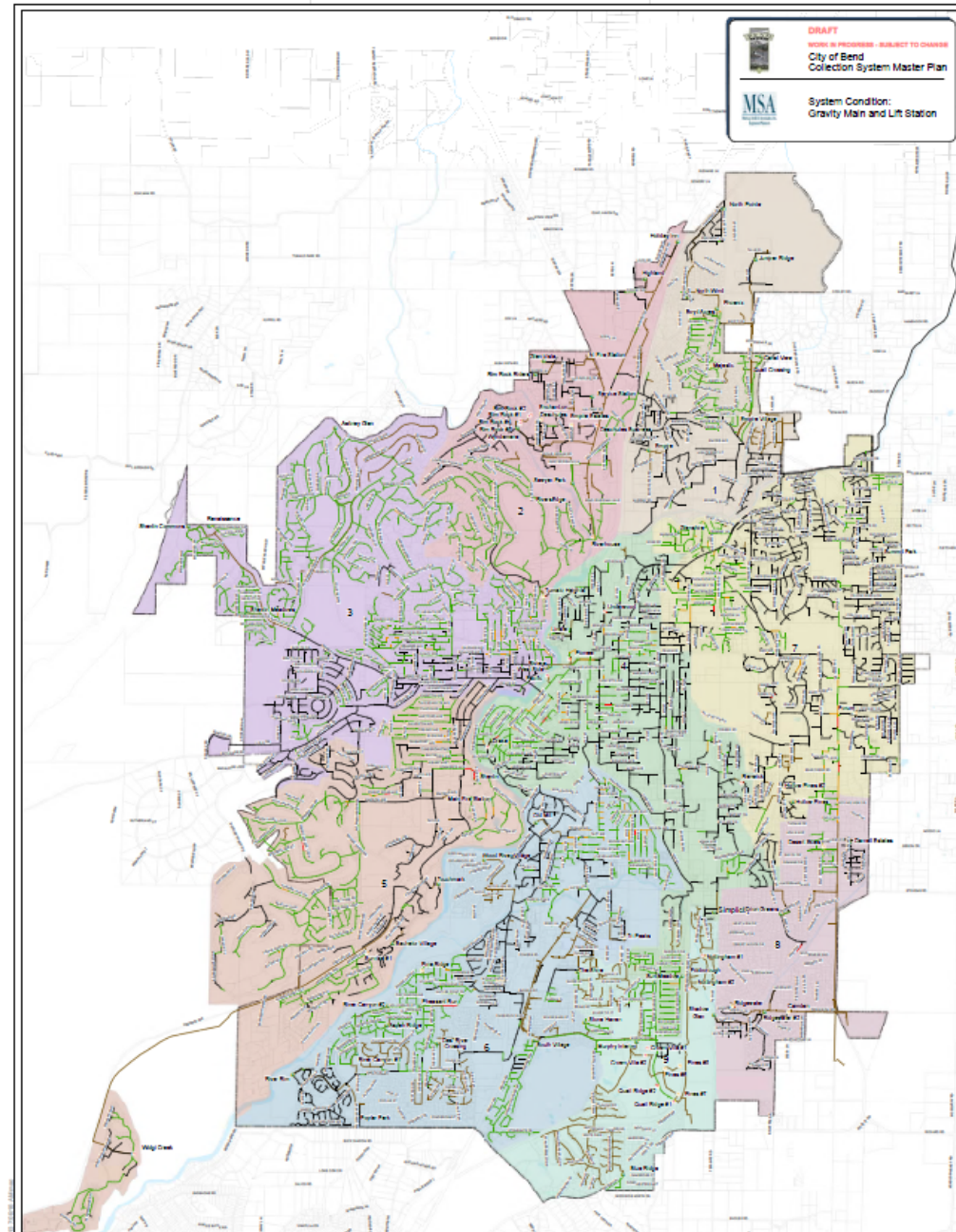
ADDENDUM 4 IMPROVEMENT MAP



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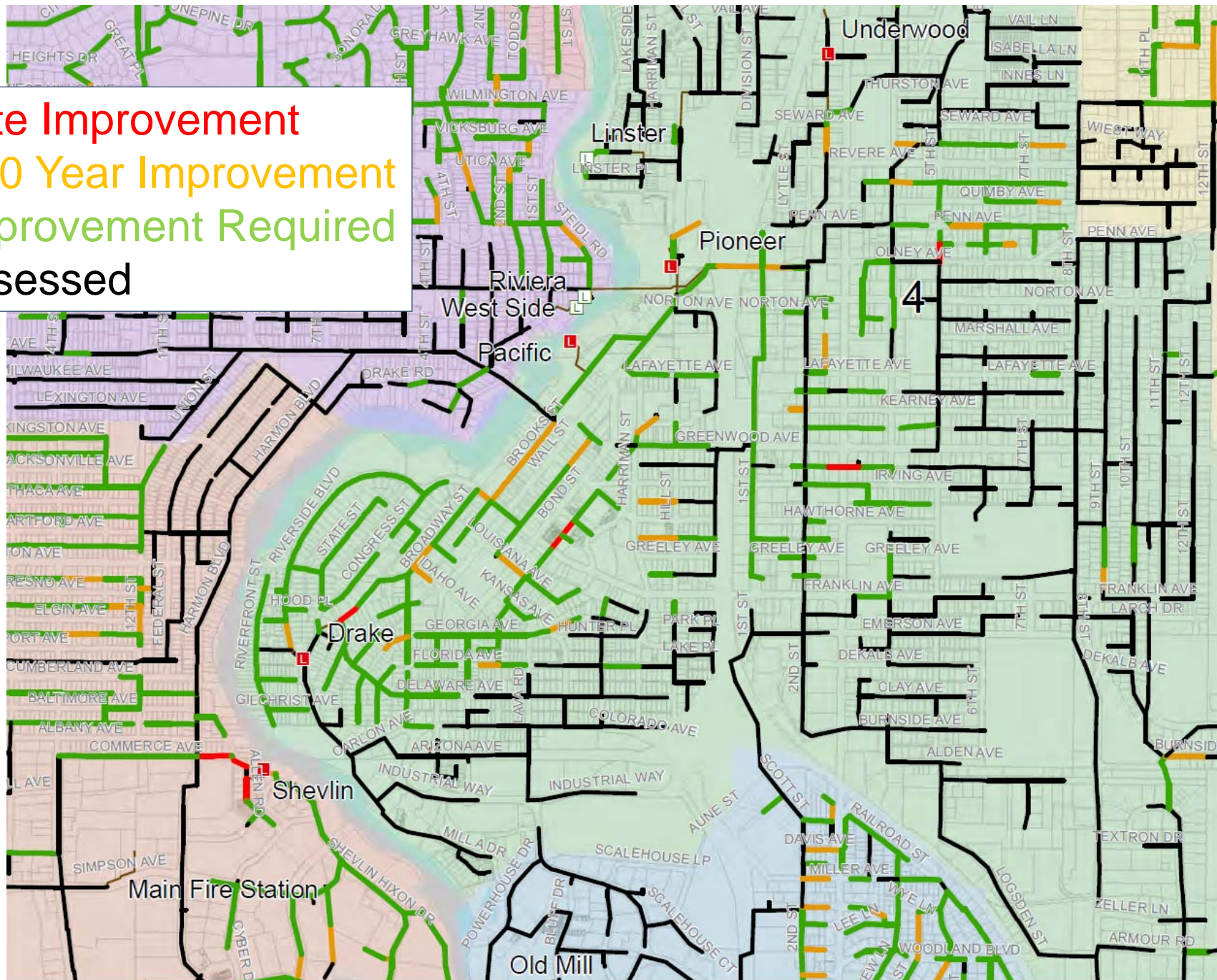
CONDITION REVIEW

- ◆ Summary of condition information
 - Lift Stations requiring improvement in 5, 10 and 20 years
 - Piping requiring improvement in 5 and 20 years



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Red: Immediate Improvement
Orange: 5 – 20 Year Improvement
Green: No Improvement Required
Black: Not Assessed



GRAVITY PIPING CONDITION REPLACEMENT VALUE

Grade of Gravity Pipe	Replacement Cost
0 or 1 – Pipe in Excellent Condition	\$178,000,000
2 – Pipe Likely Replaced beyond 20 years	\$8,000,000
3 – Pipe Likely Replaced 10-20 years	\$6,000,000
4 – Pipe Likely Replaced in 5-10 years	\$3,000,000
5 – Pipe Likely Replaced in next 5 years	\$1,000,000
Not Yet Rated	\$230,000,000
Total System Replacement Value	\$426,000,000

- Currently, \$10M in pipe improvements identified in next 20 years (could potentially be rehabilitated for less)
- If Bend was replacing 1%/year (100 year replacement), required investment of \$5M/year (including manholes)

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LIFT STATION IMPROVEMENT COSTS

Rating	Number of Lift Stations	Improvement Cost
Immediate improvement required	2	\$530,000
Improvement needed in 5 years	17	\$4,505,000
Improvement needed in 5-10 years	17	\$4,505,000
Improvement needed beyond 10 years	48	\$12,720,000
Total	84	\$22,260,000*

Assumes improvements to smaller/medium lift stations at \$265k/station – replacement of pumps, controls and prefabricated wet wells only

**Total shown is not replacement cost*

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TOTAL CONDITION RELATED IMPROVEMENTS IDENTIFIED IN 20 YEARS

- ◆ Gravity piping replacement \$10 M*
- ◆ Lift station improvements \$22M
- ◆ Total condition related improvements \$25M-\$45M

**Piping costs could be approx. half of real costs once full system is assessed*

- Only includes larger area lift stations (approx. 85) and gravity pipe
- Condition related improvements not included in previous CSMP

FLOW COMPARISON

Planning Study	Scenario	Ave. Dry Flow (mgd)	Total Peak Flow (mgd)	Reduction from Original
2007 CSMP	Original Build-out	23.1	64.0	---
2008 CIP Update	Revised Build-out	23.1	52.8	18%
2008 CIP Update	2030	15.6	33.5	48%
2013 CSMP	2033/Build-out	10.9	30.2 – 35.5*	45% - 53%

**Based on using mid or high rainfall response in model*

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- Tab to PDFs of Existing/Future System Deficiencies
Mid and High R

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2011 ADDENDUM 4

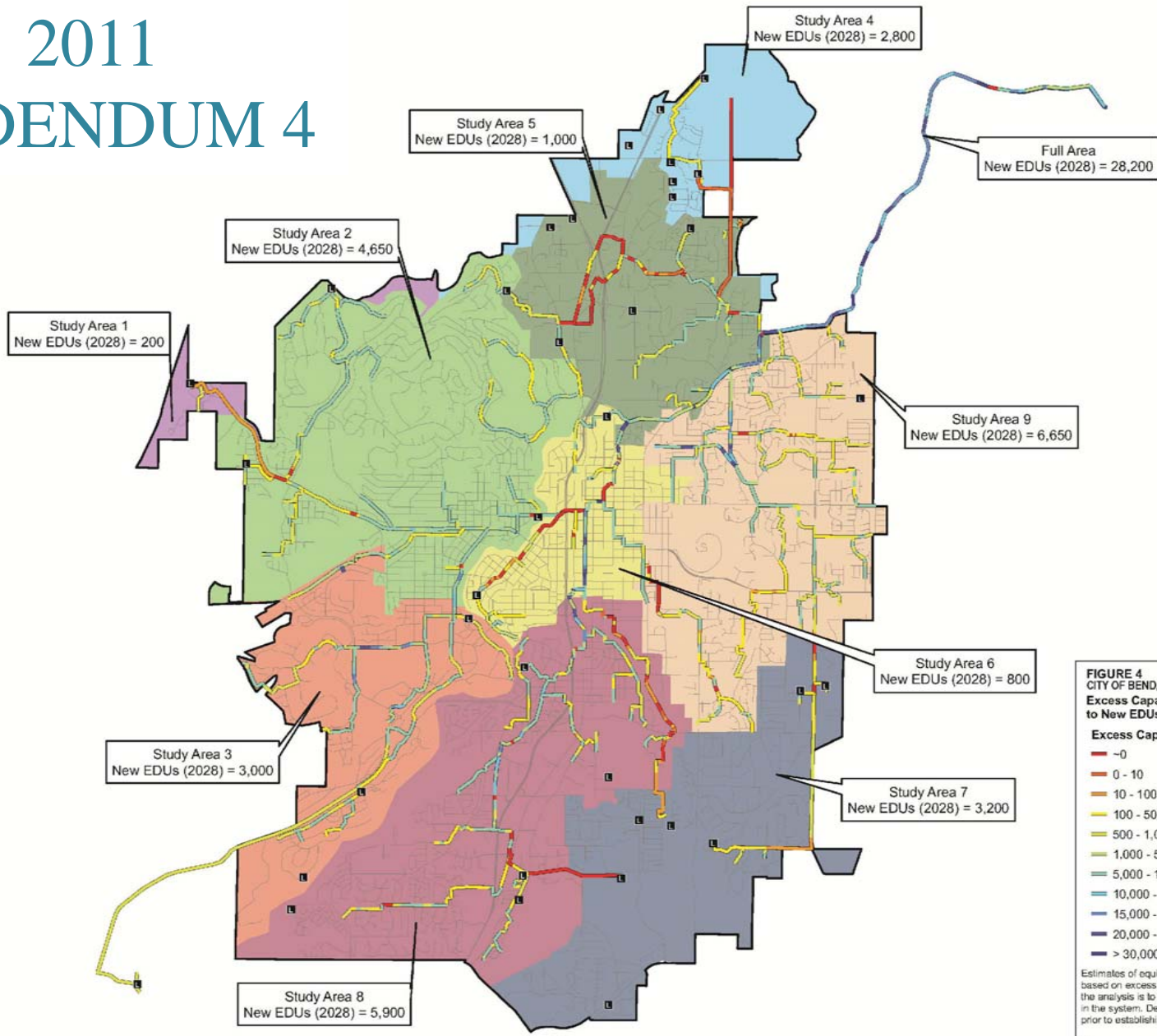


FIGURE 4
CITY OF BEND, OREGON
Excess Capacity of Existing System Compared to New EDUs by 2028 within Existing UGB

Excess Capacity (EDUs)	Study Area
-0	1
0 - 10	2
10 - 100	3
100 - 500	4
500 - 1,000	5
1,000 - 5,000	6
5,000 - 10,000	7
10,000 - 15,000	8
15,000 - 20,000	9
20,000 - 30,000	
> 30,000	

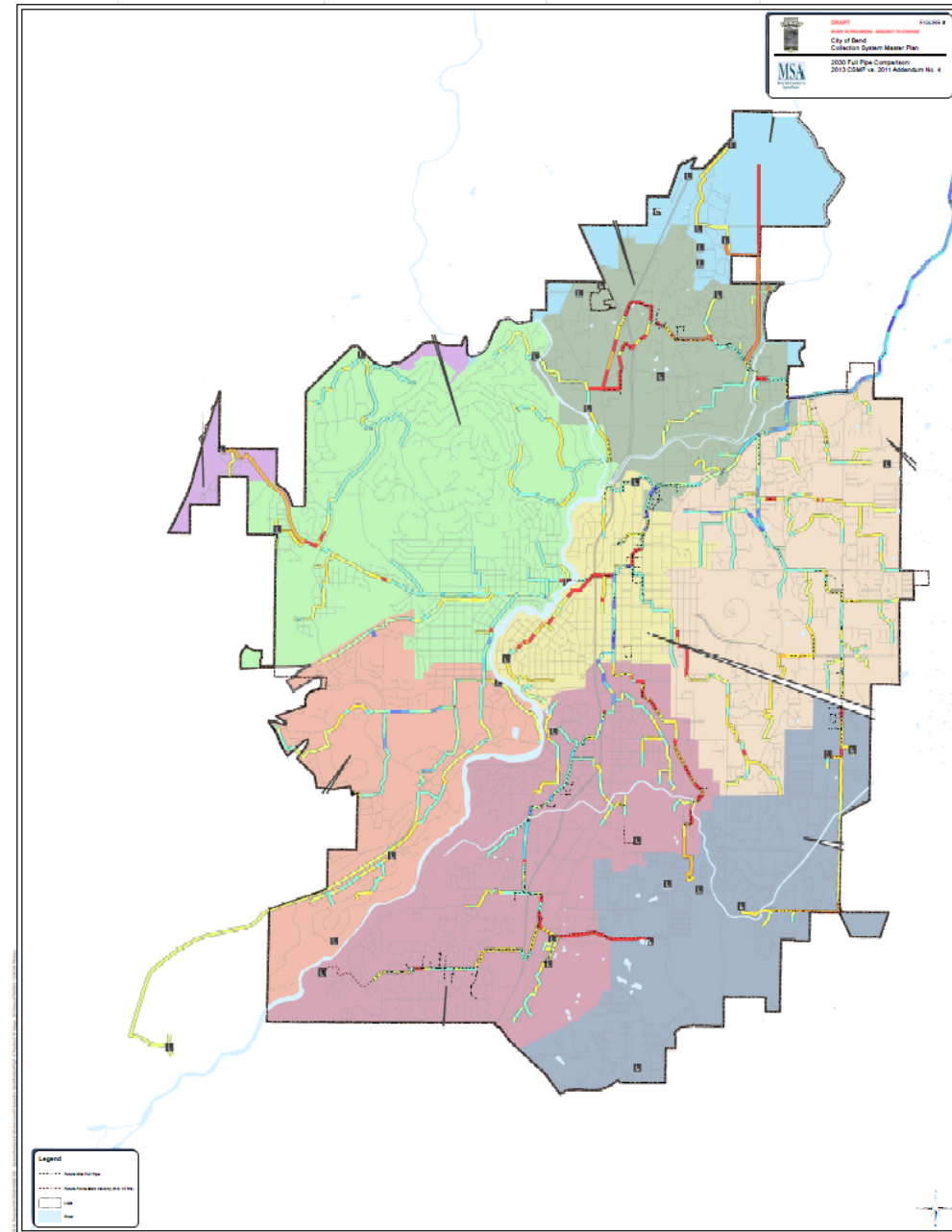
Estimates of equivalent dwelling units (EDUs) are approximate and based on excess capacity of a full flowing pipeline. The intent of the analysis is to provide generalizations about the available capacity in the system. Development specific modeling should be conducted prior to establishing available capacity for new development.

0 5,000 Feet

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2013 CSMP VS 2011 ADDENDUM 4

Tab to pdf



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WHAT HAPPENS NOW?

- ◆ Implement long term flow monitoring
- ◆ Run Initial Optimization
 - Identify least cost pipe solution
 - Propose new gravity sewers in new alignments
 - Propose new regional lift stations and force mains
 - Propose new satellite treatment facilities locations
 - Optimize for the best combination of alternatives
- ◆ Bring results back to City and SIAG for direction (Nov)

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DEFICIENCY ANALYSIS

• Q/A/Discussion?

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