City of Satellite Beach
Stormwater Utility Fund

04 September 2014
## Existing Utility Infrastructure: Pipe

<table>
<thead>
<tr>
<th>Material</th>
<th>Feet</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforced Concrete</td>
<td>61,402</td>
<td>11.6</td>
</tr>
<tr>
<td>Plastics (HDPE, etc.)</td>
<td>21,101</td>
<td>4.0</td>
</tr>
<tr>
<td>Corrugated Steel</td>
<td>5,404</td>
<td>1.0</td>
</tr>
<tr>
<td>Corrugated Aluminum</td>
<td>1,836</td>
<td>0.3</td>
</tr>
<tr>
<td>Unknown</td>
<td>1,415</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>91,158</td>
<td>17.3</td>
</tr>
</tbody>
</table>
Existing Utility Infrastructure: **Structures**

- Inlets: 710
- Inlet Baskets: 63
- Baffle Boxes: 10
- Gutters: +/- 50 miles

All need regular cleaning

*Bafflebox located at Desoto Parkway*
Existing Utility Equipment

- **Vac Truck**
  - Obtained with grant funds
  - Cost $267,033
  - Needed to clean inlets and clear clogged pipe
  - Needs protective garage

- **High Volume Trailer-Mounted Pump**
  - Obtained with grant funds
  - Needed to clear flooding and expose pipe
Existing Utility O&M Costs

- Routine Operation and Maintenance (O&M)
  - cleaning, blockages, sinkholes, damaged gutters
- Two Full-Time Equivalent Personnel
  - Pay + Benefits = $98,996/year
- Materials & Supplies
  - $20,000/year
- Quarterly street sweeping
  - $19,800/year
- TOTAL = $138,796/year
Existing Utility System’s Value

- Value +/- $22.8 million
- Useful service life between 50 and 100 years
- Renewal & replacement (R&R) rate should match the useful service life
  - 50 years = 2% of value, $456,000/year
  - 75 years = 1.33% of value, $304,000/year
  - 100 years = 1% of value, $228,000/year
- City Engineer recommends $200k to $300k/year for renewal and replacement
  - Excludes inflation
Existing Utility Equipment Value

- Value ~$300,000
- Useful service life ~15 years
- Renewal & replacement (R&R)
  - 15 years = 6.67% of value, $20,000/year
  - *Excludes inflation*
Existing Utility Infrastructure Needs

- Replace 10,416 ft of Failing Steel and Aluminum Pipe
  - $150/foot (conservative)
  - $1,562,400 cost
- Slip-line 7,500 ft of Inaccessible Concrete Pipe
  - $100/foot (conservative)
  - $750,000 cost
- Replace 29 Damaged Inlet Tops
  - $2,800/inlet top replacement
  - $9,000/ entire inlet upgrade
  - $81,200 to $261,000 cost
- Total Cost: $2,393,600+
Existing Utility Funds

Revenue

- +/- 5,000 Contributors
- Rate = $65/ERU/Year
- Revenue realized: $325,000/Year
- ERU=Equivalent Residential Unit
History of Rates

- Created in 1997 with $36 per ERU
- Increased in 2006 to $42 per ERU
- Increased in 2008 to $54 per ERU
- Increased in 2009 to $65 per ERU
## Existing Utility Revenue vs. Debt

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Revenue Available</th>
<th>Debt Service*</th>
<th>Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY14/15</td>
<td>$325,000</td>
<td>-$311,535</td>
<td>$13,465</td>
</tr>
<tr>
<td>FY15/16</td>
<td>$325,000</td>
<td>-$246,726</td>
<td>$78,274</td>
</tr>
<tr>
<td>FY16/17</td>
<td>$325,000</td>
<td>-$159,435</td>
<td>$165,565</td>
</tr>
<tr>
<td>FY17/18</td>
<td>$325,000</td>
<td>-$159,435</td>
<td>$165,565</td>
</tr>
<tr>
<td>FY18/19</td>
<td>$325,000</td>
<td>-$159,435</td>
<td>$165,565</td>
</tr>
<tr>
<td>FY19/20</td>
<td>$325,000</td>
<td>-$13,286</td>
<td>$311,714</td>
</tr>
<tr>
<td>FY20/21</td>
<td>$325,000</td>
<td>$0</td>
<td>$325,000</td>
</tr>
</tbody>
</table>

* For completed water quality projects
### Existing Utility Revenue vs. OM & RR

<table>
<thead>
<tr>
<th>FY</th>
<th>Net Available</th>
<th>Pipe &amp; Inlet O&amp;M</th>
<th>Funds Available For R &amp; R</th>
<th>From General Fund</th>
</tr>
</thead>
<tbody>
<tr>
<td>14/15</td>
<td>$13,465</td>
<td>-$138,796</td>
<td>-</td>
<td>$105,531</td>
</tr>
<tr>
<td>15/16</td>
<td>$78,274</td>
<td>-$138,796</td>
<td>-</td>
<td>$40,722</td>
</tr>
<tr>
<td>16/17</td>
<td>$165,565</td>
<td>-$138,796</td>
<td>$6,796</td>
<td></td>
</tr>
<tr>
<td>17/18</td>
<td>$165,565</td>
<td>-$138,796</td>
<td>$13,538</td>
<td></td>
</tr>
<tr>
<td>18/19</td>
<td>$165,565</td>
<td>-$138,796</td>
<td>$20,307</td>
<td></td>
</tr>
<tr>
<td>19/20</td>
<td>$311,714</td>
<td>-$138,796</td>
<td>$173,225</td>
<td></td>
</tr>
<tr>
<td>20/21</td>
<td>$325,000</td>
<td>-$138,796</td>
<td>$339,429</td>
<td></td>
</tr>
</tbody>
</table>
Existing Utility Funding Gaps

- Cannot cover routine O&M for FY14/15 or FY15/16
  - General Fund is covering these costs
- Replacement and slip-lining of pipe needed to prevent flooding will take 2 decades
- Current funding level does not address:
  - Equipment replacement
  - Inflation
Existing Utility Issues Summary

- All the preceding only addresses:
  - Maintaining the flood control service level \textit{status quo}
  - Cleaning filter baskets, inlets, and pipes \textit{as required to avoid flooding} (less than optimum for water quality)
  - Street sweeping (water quality program)
- Does not fully support O&M of existing water quality improvements (e.g., pond management)
- Any service improvements (flood control or water quality) are incidental to replacement
- \textit{Does not address new water quality improvements}
Water Quality Programs

- **NPDES** (National Pollution Discharge Elimination System)
  - USEPA program administered by FDEP
  - Mandates annual inspections and maintenance
  - Becoming progressively more restrictive
  - Primarily drives O&M

- **BMAP** (Basin Management Action Plan)
  - USEPA program administered by FDEP
  - Mandates system improvements to meet numerical targets for nutrient reduction
  - Primarily drives water quality improvement projects
BMAP
Water Quality Improvement

• Based on TMDLs (Total Maximum Daily Loads) set by FDEP Rule
  ▪ Established using 1990’s data and model

• Satellite Beach’s reduction targets:
  ▪ Total Nitrogen (TN): 10,486 lbs/yr (-63%)
  ▪ Total Phosphorus (TP): 1,988 lbs/yr (-60%)
Water Quality Improvement

- Phase 1 BMAP
  - 5 years beginning February 2013
  - 15% of TMDLs to be met by Feb 2018
    - For Satellite Beach: 1,572.9 lbs TN, 298.2 lbs TP reduction targets

- BMAP 1-Year Progress Report for Banana River
  - TN target met: 17,258 lbs reduction > 14,609 lbs target
  - TP target met: 4,155 lbs reduction > 3,354 lbs target

- No further action required by the City until after 2018
## Water Quality Improvement

### How Satellite Beach met our targets (Projects)

<table>
<thead>
<tr>
<th>Project</th>
<th>Cost</th>
<th>lbs TN</th>
<th>lbs TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jackson Ave</td>
<td>$383,950</td>
<td>24</td>
<td>8.3</td>
</tr>
<tr>
<td>DeSoto Exfiltration</td>
<td>$488,708</td>
<td>166</td>
<td>24.2</td>
</tr>
<tr>
<td>Jamaica Blvd</td>
<td>$459,843</td>
<td>600</td>
<td>160.2</td>
</tr>
<tr>
<td>DeSoto Baffle Boxes</td>
<td>$1,143,461</td>
<td>82</td>
<td>9.5</td>
</tr>
<tr>
<td>Cassia 1 &amp; 2</td>
<td>$1,053,119</td>
<td>134</td>
<td>21.7</td>
</tr>
<tr>
<td>Cassia 3</td>
<td>$1,255,231</td>
<td>68</td>
<td>35.7</td>
</tr>
<tr>
<td>North Drainage</td>
<td>$1,112,052</td>
<td>318</td>
<td>80.5</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>$5,896,363</strong></td>
<td><strong>1,392</strong></td>
<td><strong>340.1</strong></td>
</tr>
<tr>
<td><strong>% of TMDLs met</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>13%</strong></td>
<td><strong>17%</strong></td>
</tr>
</tbody>
</table>
Water Quality Improvement

How Satellite Beach met our target (Programs)

<table>
<thead>
<tr>
<th>Program</th>
<th>$/Year</th>
<th>lbs TN</th>
<th>lbs TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jamaica Pond Reuse</td>
<td>$0</td>
<td>277</td>
<td>25.0</td>
</tr>
<tr>
<td>Street Sweeping</td>
<td>$19,800</td>
<td>251</td>
<td>113.0</td>
</tr>
<tr>
<td>Education, Ordinance</td>
<td>$3,000</td>
<td>501</td>
<td>98.5</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>$22,800</td>
<td>1,029</td>
<td>236.5</td>
</tr>
<tr>
<td>% of TMDLs met</td>
<td></td>
<td>10%</td>
<td>12%</td>
</tr>
</tbody>
</table>
## Water Quality Improvement

### How Satellite Beach met our targets (Combined)

<table>
<thead>
<tr>
<th></th>
<th>lbs TN</th>
<th>lbs TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projects</td>
<td>1,392</td>
<td>340.1</td>
</tr>
<tr>
<td>Programs</td>
<td>752</td>
<td>211.5</td>
</tr>
<tr>
<td>TOTALS</td>
<td>2,421</td>
<td>551.6</td>
</tr>
</tbody>
</table>

- % of TMDLs met: 23% (TN), 29% (TP)

- Need only meet 15% of TMDLs in first 5 years

* Does not include recurring O&M or R&R for projects

Projects: $5,896,363*

Programs: $22,800/Year
Water Quality Improvement

- Capital Cost per Pound (Projects)

<table>
<thead>
<tr>
<th></th>
<th>$/lbs TN</th>
<th>$/lbs TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jackson Ave</td>
<td>$15,998</td>
<td>$46,259</td>
</tr>
<tr>
<td>DeSoto Exfiltration</td>
<td>$2,944</td>
<td>$20,195</td>
</tr>
<tr>
<td>Jamaica Blvd (ponds)</td>
<td>$766</td>
<td>$2,870</td>
</tr>
<tr>
<td>DeSoto Baffle Boxes</td>
<td>$14,945</td>
<td>$120,364</td>
</tr>
<tr>
<td>Cassia 1 &amp; 2</td>
<td>$7,859</td>
<td>$48,531</td>
</tr>
<tr>
<td>Cassia 3</td>
<td>$18,459</td>
<td>$35,161</td>
</tr>
<tr>
<td>North Drainage</td>
<td>$3,497</td>
<td>$13,814</td>
</tr>
<tr>
<td>AVERAGES</td>
<td>$4,236</td>
<td>$17,337</td>
</tr>
</tbody>
</table>

- All except Jamaica use only exfiltration and baffle boxes
Water Quality Improvement

- Annual Cost per Pound (Programs)

<table>
<thead>
<tr>
<th>Program</th>
<th>$/lbs TN</th>
<th>$/lbs TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jamaica Pond Reuse</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Street Sweeping</td>
<td>$79</td>
<td>$175</td>
</tr>
<tr>
<td>Education, Ordinance</td>
<td>$6</td>
<td>$30</td>
</tr>
</tbody>
</table>

- Inexpensive Compared to Cost per Pound for Projects
  - Average: $4,236 for TN, $17,377 for TP

- The City has used all of our available program credits
Water Quality Improvement

- **Cost per Pound Extrapolated**
  - Remaining reductions to meet the TMDLs
    - 8,065 lbs TN, 1,411 lbs TP
  - Based on average project cost/pound
    - Greater of: $34,162,478 for TN or $24,469,647 for TP

- **Estimated Cost per Taxpayer to meet TMDL requirements (not proposed)**
  - $6,832 Total, $455/year over 15-year BMAP

- Exfiltration and baffle boxes no longer accepted without supplemental treatment; ponds questionable
  - Therefore, expect cost per pound to exceed experience

- No conveniently available open land for more ponds

- Does not include recurring O&M, R&R, or inflation
## Brevard County SWU Rates

2014 Florida Stormwater Association Survey

<table>
<thead>
<tr>
<th></th>
<th>$/Year</th>
<th>Sq Ft/ERU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satellite Beach</td>
<td>$65</td>
<td>3,000</td>
</tr>
<tr>
<td>Brevard County*</td>
<td>$65</td>
<td>2,500</td>
</tr>
<tr>
<td><strong>Statewide Average</strong></td>
<td><strong>$68.16</strong></td>
<td><strong>3,047</strong></td>
</tr>
<tr>
<td>Cocoa*</td>
<td>$69</td>
<td>2,166</td>
</tr>
<tr>
<td>Cocoa Beach*</td>
<td>$72</td>
<td>2,900</td>
</tr>
<tr>
<td>Titusville*</td>
<td>$79.44</td>
<td>3,300</td>
</tr>
</tbody>
</table>

* Of 8 Brevard governments reporting, these 4 exceed SB rate
### Statewide SWU Rates

<table>
<thead>
<tr>
<th>Area</th>
<th>$/Year</th>
<th>SqFt/ERU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Statewide Average</strong>*</td>
<td>$68.16</td>
<td>3,047</td>
</tr>
<tr>
<td>Charlotte County</td>
<td>$128.52</td>
<td>43,560</td>
</tr>
<tr>
<td>Winter Park</td>
<td>$138.72</td>
<td>2,324</td>
</tr>
<tr>
<td>Palm Coast</td>
<td>$139.80</td>
<td>3,682</td>
</tr>
<tr>
<td>Clearwater</td>
<td>$165.24</td>
<td>1,830</td>
</tr>
</tbody>
</table>

* 40% of 88 reporting governments exceed average
Statewide SWU Rates
$/Year/1,000 SqFt

- Satellite Beach $21.67 Baseline
- Titusville $24.12 +11%
- Cocoa Beach $24.84 +15%
- Brevard County $28.80 +33%
- **Statewide Average** $30.96 +43%
- Cocoa $31.08 +43%
- Palm Coast $37.92 +75%
- Winter Park $59.64 +175%
- Clearwater $90.24 +316%

* 41% of 78 reporting governments exceed average
Water Quality Improvement Efforts

Technical Issues

- Favored Best Management Practices (BMPs) found to be less effective than believed
  - Need to treat water before exfiltration
- Promising BMPs not used because of unquantified benefit
Water Quality Improvement Efforts

Technical Issues (continued)

- 2011 superbloom and 2012 brown algae bloom
  - BMAP parameters indicated improvement until these blooms
- Role of nutrient load built up over years (muck, vegetation, etc)
  - Key consideration in the cause of the superbloom
- TMDL (PLSM) Model did not differentiate groundwater from surface transport
  - Surface and groundwater flow responses differ
- Nutrient/seagrass relationship statistically questionable
  - Technical paper at FDEP for review
Technical issues result in malinvestment

- Investment in technology that does less than originally expected
  - Exfiltration
  - Treatment Ponds
- Investment in retrofits to correct deficiencies
  - Baffle box trash racks
- Lack of investment in promising technologies
- Lack of investment in BMPs addressing vital issues
  - Muck removal
Water Quality Improvement Efforts

Resolution of Issues

- Stakeholders in dialogue with FDEP
- Continue to improve data and science upon which the TMDLs and compliance are based
- Defer implementing BMPs until their effectiveness and their need are better understood
  - Have at least 4 years before regulatory repercussions
Water Quality Improvement Efforts

Recommendations:

- Increase Stormwater Utility Rate to at least cover O&M and R&R
  - Saves General Fund drawdowns
  - Better represents the cost of stormwater management
- Cancel the Lori Laine Stormwater grant project
  - Match not available
  - Upfront cost of this reimbursement project is not available
  - Effectiveness vs cost questionable
Stormwater Utility Fund Needs

- Operation & Maintenance
  - $140,000/year (actual)
- System Renewal & Replacement
  - $200,000/year (minimum City Engineer suggestion)
- Equipment Replacement
  - $20,000/year (estimate)
- Water Quality Improvements
  - $100,000/year (nominal)
  - $10,000 to $30,000 of which to support good science
  - Remainder to be accumulated as match for grants
    - $1M project ($400k match) every 4 years
- Muck Removal
  - ~180,000 cubic yards of muck in the City
  - $2.7 M low estimate ($15/cubic yard) to remove the muck
Rate To Address Existing Needs

Rate Based on Existing System Needs, Excluding Major Water Quality Projects

- $520,000
  - $140,000 O&M
  - $200,000 system R&R
  - $20,000 equipment replacement
  - $159,435 debt service
- $104/ERU/year ($35/year/1,000 sq ft > $31 FL average)
Rate To Address Future Needs

Water Quality (Ignoring Muck)

- Additional $20/ERU/year ($7/year/1,000 sq ft)
- $100,000 additional funds every year
- Would allow a $400,000 match for a $1M project every four years

Muck Removal ($135,000/year over 20 years)

- Additional $27/ERU/year ($9/year/1,000 sq ft)
Rates do NOT consider:

- Inflation
- Future NPDES requirements
- Additional staff
- O&M and R&R for future added:
  - System components
  - Equipment
Recommendation

- Increase rate to $85 per ERU for FY 14/15
- Increase rate to $104 in FY 15/16

OR

- Increase rate to $104 for FY 14/15
- Review the rate each subsequent year based on need for specific projects
Impacts to Property Owners with Recommended Rate Increase

- For Commercial owners:
  - Of 125 units on the billing roll, average impervious surface is approximately 17,000 sq.ft.
  - 2013 charge for 1202 A1A (Shell Station) was $350.09
  - 2014 proposed rate of $85 per ERU would increase 1202 A1A to $457.81
  - Increase of $107.72 per year, $8.98 per month

- For residential owners:
  - FY 14/15 Increase = $20 per year, $1.67 per month
QUESTIONS & DISCUSSION